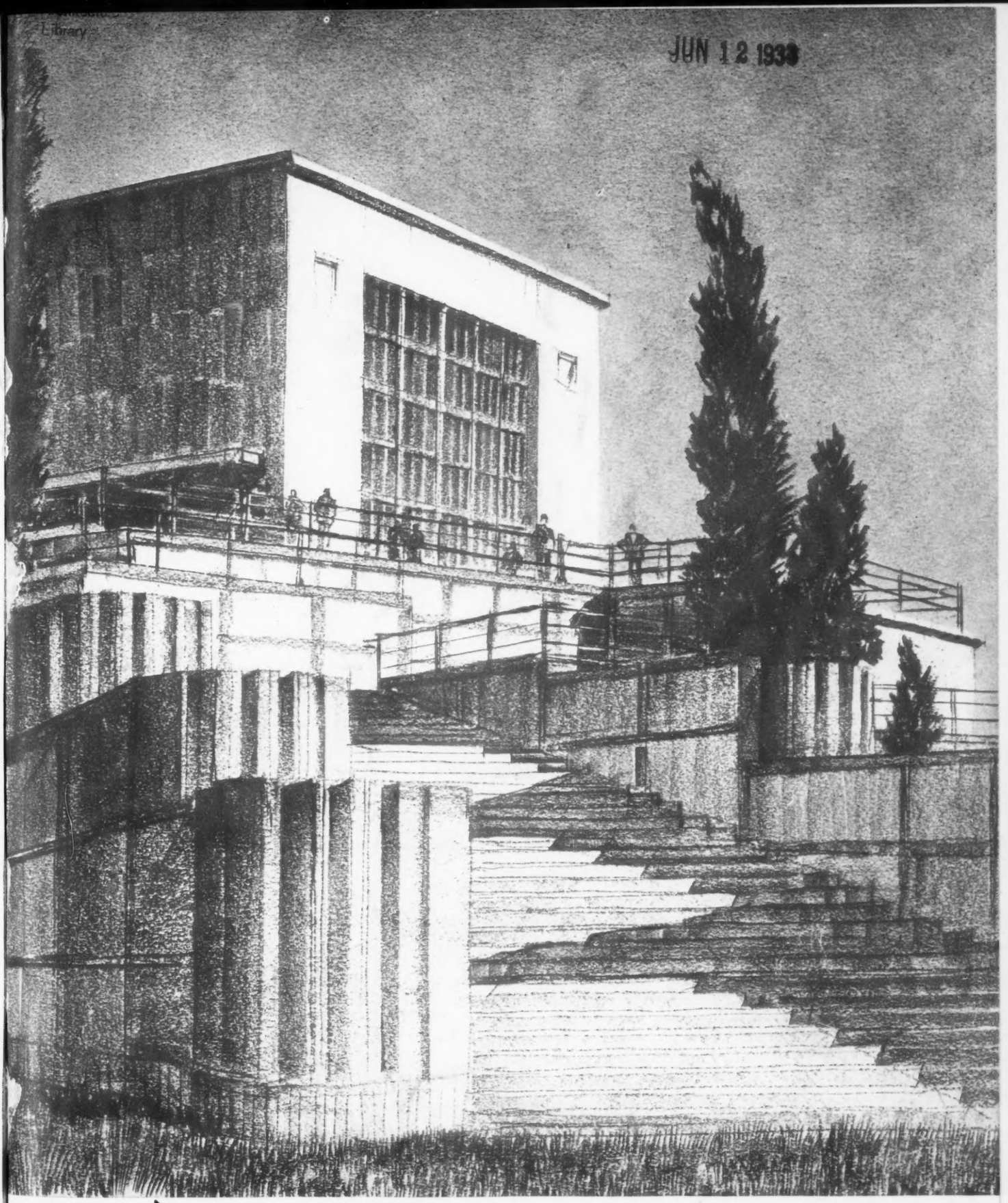
Library
JUN 12 1933

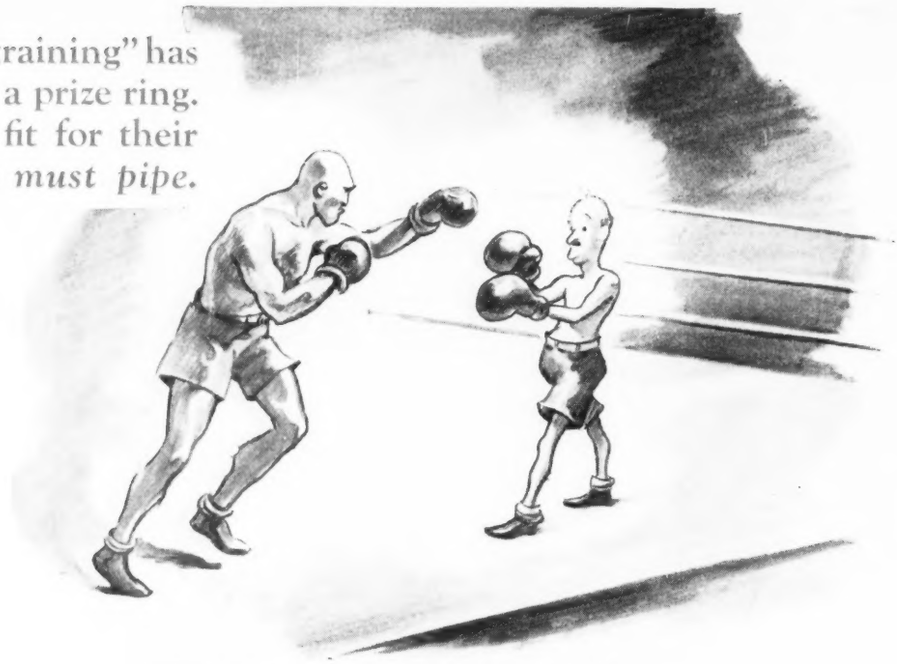


PENCIL POINTS

JUNE 1933

AN ILLUSTRATED JOURNAL for the DRAFTING ROOM

a man "out of training" has no business in a prize ring. Men must be fit for their jobs—*and so must pipe.*



For these TOUGH Jobs—

Pick Pipe That Can Take It!

It's all right to put in untried pipe—experimental alloys of this and that—when you are looking for only a few years of service, or where service demands are easy. But where pipe must LAST under the tough conditions imposed by *specific hard-service installations,* you need the PROVED endurance of Reading Puddled Iron.

For the uses described on this page, Reading Puddled Iron Pipe stands without an equal. That has been demonstrated by more installations, over a longer period of years, than any other kind of pipe can show. Insist on READING for lowest-cost service in these uses. If you need pipe for a "hard-service spot," write us.

For Cold and Hot Water Lines

Reading Puddled Iron Pipe assures *generations* of trouble-free service with all ordinarily corrosive waters. In thousands of such installations, it has been proved that the life of Reading Pipe is from two to five times longer than that of ordinary pipe.

For Drains

Alternating wet and dry conditions often mean swift death for most kinds of pipe. Reading Puddled Iron Pipe is especially adapted to give long service under such conditions.

For Heating Supply Risers, Distributing Mains and Return Lines

Due to its high melting point (300 Degrees F. higher than that of steel) and because of the presence of non-metallic silicate, Reading Puddled Iron is far less subject to destructive oxidation than other ferrous metals.

For Vents

When exposed to atmospheric corrosion, Reading Puddled Iron Pipe forms *two* hard, impervious films of oxide which effectively prevent destructive pitting and penetration of rust. Corrosion is actually *stifled.*

READING PUDDLED IRON

SINCE 1848

READING IRON COMPANY PHILADELPHIA

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

Pencil Points, published monthly by The Pencil Points Press, Inc., at 258 Atlantic St., Stamford, Conn. Publication office, Stamford, Conn. Editorial and Advertising Offices 330 West 42nd Street, New York, N. Y. Yearly subscription $3.00, single copies 35 cents. Entered as second class matter, March 10, 1930, at the Post Office, Stamford, Conn., under the Act of March 3, 1879. Volume XIV, No. 6.
Dated June, 1933

He Calls it "Nickel-and-Dime Business"

Nevertheless There May Be Worthwhile After-benefits in this Layman's Suggestion to the Architectural Profession

To the Editor of Pencil Points

Dear Sir:

On Sunday last my wife and I were confronted with an architectural problem.

The kitchen windows, above the sink, facing west, need to be shaded in a way that will not "pocket" the heat and will permit the out-opening casement windows to be left open during a rain.

This doesn't sound hard but, for a layman, the problem is complicated by a number of details. A built-in cupboard closely tops the windows on the inside. The screens are inside the windows. On the exterior the second-story overhang extends out 9 inches on a line 7 inches above the windows but is broken in the center by a projecting beam-end. (Have I made myself clear? I doubt it.)

The Powers family, consisting of self and wife, pored over this problem for three-quarters of an hour, first indoors and then out, and finally flunked it.

That was yesterday. Today Mrs. Powers phones to ask (what seems to me) a very logical question.

"As I understand it," she says, "the architectural profession can use any kind of job these days to help keep itself busy. Why, then," she propounds, "shouldn't I be able to call some architectural office—either a bureau or that of the architect who designed our house—and, at a reasonable cost, be told the best solution?

"As it is now, I'll call in either an awning house or a store selling shades and shutter-curtains and will be sure to get prejudiced advice. Do you remember that last spring we had the question of whether we needed a 'safety-first' repair for the deck over the maid's room as the painting contractor urged? That's another example of what I have in mind.

"I don't expect the architect himself, the head of any office, to come out. All I want is someone of enough architectural and construction experience to be able to look at the house, study the job, and then bring back or telephone back an expert opinion."

Somehow or other that doesn't seem to me an impractical idea.

In the first place, in plenty of lines of business, "servicing" to keep the past customer thoroughly satisfied has demonstrated itself to be profitable strategy.

In the second place, virtually all businesses, today, are admitting the wisdom of taking "nickel-and-dime" orders.

In the third place, service of this sort would renew contacts, and contacts of that nature are one of the sources of architectural business.

In the fourth place, if handled by an alert contact man, it might easily disclose opportunities for pot-boiling remodeling jobs.

In my line of business, which is semiprofessional in character, we are jumping at parallel chances to be of service.

With all this in mind, being an advertising counsellor, I then reacted in characteristic fashion. I drafted a form letter such as I would send, were I an architect, to every client for whom I had designed a house and also to all present occupants of houses that had changed hands since I designed them. The latter might prove decidedly responsive. This is the sort of message I would use—

Dear Mrs. X————

In operating a house and a household there are certain to come times when a few minutes of architectural advice would be most convenient—if you had an architect handy to consult.

I have an idea that I have devised a way to render such a service and keep the cost well within reason.

Whenever you think you need such service please let me or my office know.

I will then send out, at your convenience, one of my assistants to familiarize himself with what you have in mind. He will either answer your questions on the spot or, if he needs my help, he will report back to me. In either case you will get safe, sound advice.

The cost of this service will be held to three dollars an hour for the time spent on your problem on your premises or in this office; minimum charge, one hour.

Of course, if the work you have in mind requires drawings, superintendence, or other service, that will be arranged for in advance and charged in the standard way on the standard percentage basis. There will then be no separate service charge.

This is not, you see, intended to be a source of great income to me. The true reason for it is that I want the occupants of the houses I designed to enjoy them to the utmost.

Yours,

A. R. Chitect.

Mr. Editor, if this idea has any merit to it, I freely present it to the profession, letter and all.

In the meantime, what am I going to do about those kitchen windows?

In the end, I'll probably call up my architect and panhandle a suggestion.

However, I would much prefer that he had anticipated my need and sent me a letter of the sort I have just suggested.

Yours very truly,

Marsh K. Powers.

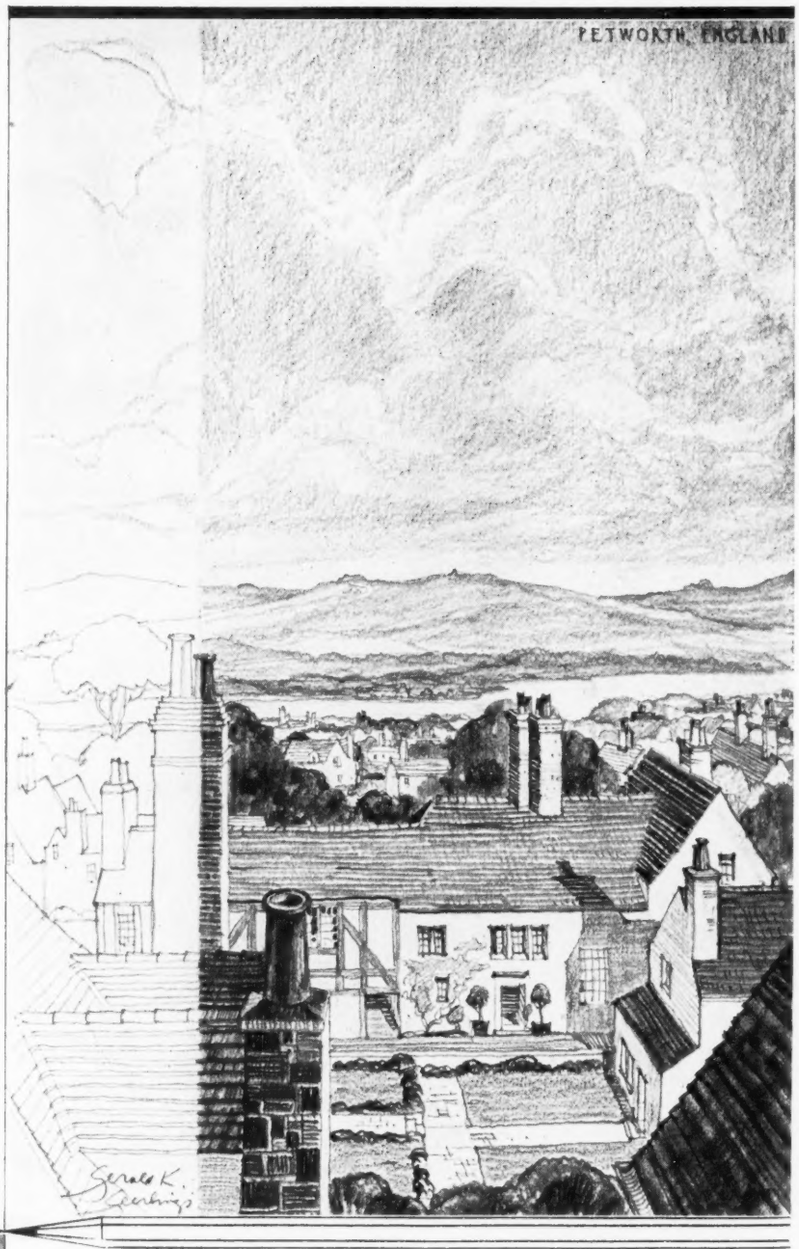
May 1, 1933.

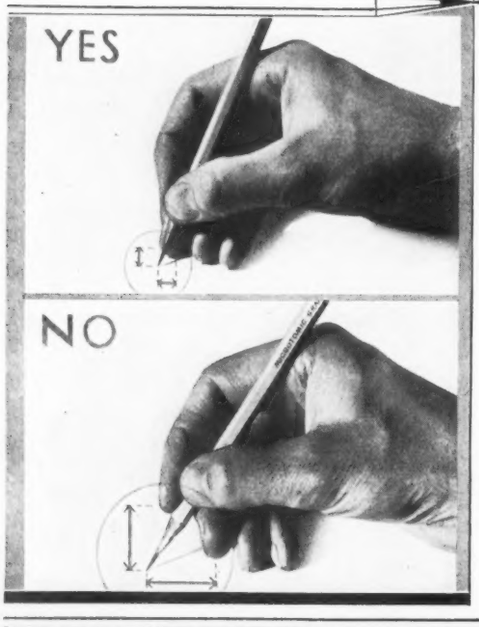
AERIAL PERSPECTIVE, HILLS AND CLOUDS

YOU CAN IMPROVE this drawing by completing it—why don't you? Because this paper is unusually smooth, you will find a 5B or 6B best. The original was drawn by Gerald K. Geerlings, exactly this size, on Bristol board. In doing it entirely with an HB Microtomic Van Dyke Pencil, he reports sharpening the point only once with the knife and twice with the sandpaper block. Some makes of pencils would require the use of several grades to attain the variety of values here obtained with one only. If you prefer to use more, however, there are 18 grades from which to choose. Concerning the drawing Mr. Geerlings says:

"The value of being facile with aerial perspective cannot be overestimated, for often its use in a single drawing shows the client more than several ground views. You can find ample opportunities for practice wherever you are. To be assured of a simple, satisfactory sketch, first do a reliable line drawing, then add values in practically flat tones."

FREE SAMPLES of any two degrees of the Microtomic Van Dyke Pencil will be sent on request. Write to the Eberhard Faber Pencil Company, Dept. PP 6-33, 37 Greenpoint Avenue, Brooklyn, N. Y.





THREE ARE BETTER THAN TWO

"Only two sensitive contacts—tips of forefinger and thumb—control the pencil when held as shown below to the left. The last joint of the middle finger serves as a rest, but exercises no active control over the pencil point. In contrast with this remote control, the end of the third finger provides a third sensitive point of contact, if held as shown in the upper photograph. After a little practice you will marvel at the increased precision in your drafting, particularly in curved lines. Compare the length of arrows for the relative merits of control." — G. K. G.

MICROTOMIC
VAN DYKE PENCIL
EBERHARD FABER
Made by the New Eberhard Faber Chemical Process, in 18 Consistently Accurate Degrees—7B Softest to 9H Hardest.

Russell F. Whitehead
Editor
Kenneth Reid
Managing Editor
E. L. Cleaver
Associate Editor

June + PENCIL POINTS + 1933

Vol. XIV — *Something for Everyone in the Architectural Profession* — No. 6

Cover Design
Electrical Group, Chicago
by Samuel Chamberlain

Reader's Comment Items Required for Future Reference

ARTICLES

Modern Design — Chicago and Tomorrow's House? . *F. Chouteau Brown* 245
Office Management — Figures and Finance . . . . . *Robert Lee Henry* 269
General Culture — Ripley's Recipes . . . . . *Hubert G. Ripley* 271
Competition Drawings — Rome Prize . . . . . *Jury Report* 279
Building Equipment — Modern Air Conditioning, 1 . . . *Harold L. Alt* 285
Business Getting — He Calls it "Nickel and Dime Business" *Marsh Powers* 9

Design Sources

THE MONOGRAPH SERIES

Volume XIX, Number 3

Garrison Houses Along the New England Frontier . . *Stuart Bartlett* 253

20 Plate Illustrations and 2 Measured Drawings.

COMPARATIVE DETAILS—Group 9

Construction and Design

Residence Bars 273

The work of Evans, Moore & Woodbridge, Howard & Frenaye, Hyde & Shepherd, Treanor & Fatio, and J. D. Tullis.

PLATES

Drafting Technique and Design

OIL PAINTING—Color Reproduction . *H. R. Butler* 244
ELEVATION RENDERING—Rome Prize . *Olindo Grossi* 277
PLAN RENDERING—Rome Prize . . *Olindo Grossi* 278
RENDERING—House Design . . . *J. Floyd Yewell* 252

Office Data

DATA SHEETS—*Prepared by Don Graf*

Sines 45° to 90° Cosines 0° to 45° 280
North Vertical Sundial 281
Cubic Cost Calculator 282
Period Furniture 283

Personal and News

"HERE, THERE, THIS, AND THAT"

Competition and Scholarship Announcements, Letters from Readers, etc. 279

Published Monthly by THE PENCIL POINTS PRESS, INC., *Stamford, Conn., U.S.A.*

Ralph Reinhold
President and Treasurer
Philip H. Hubbard
Vice President
L. F. Thompson
Vice President

EXECUTIVE AND EDITORIAL OFFICES
330 WEST 42nd STREET, NEW YORK, N. Y.

35 cents a copy. Yearly subscription $3.00, two years subscription $5.00, payable in advance, to the U. S. A., U. S. Possessions, Cuba and Mexico. Add $1.00 a year for postage for Foreign subscriptions. Canadian subscriptions 50 cents a year additional.

Remittances by International or American Express Money Orders or by Draft on a bank in the U. S. payable in United States funds.

Subscribers are requested to state profession or occupation.

Changes of address must reach us before the 20th of the month to assure delivery of forthcoming issue. Be sure to give both old and new address.

TO CONTRIBUTORS: Articles, drawings, photographs, etc., sent with a view to publication will be carefully considered, but the Publisher will not undertake responsibility for loss or damage.

Copyright, 1933, by Pencil Points Press, Inc. Trade Mark Registered. All rights reserved.

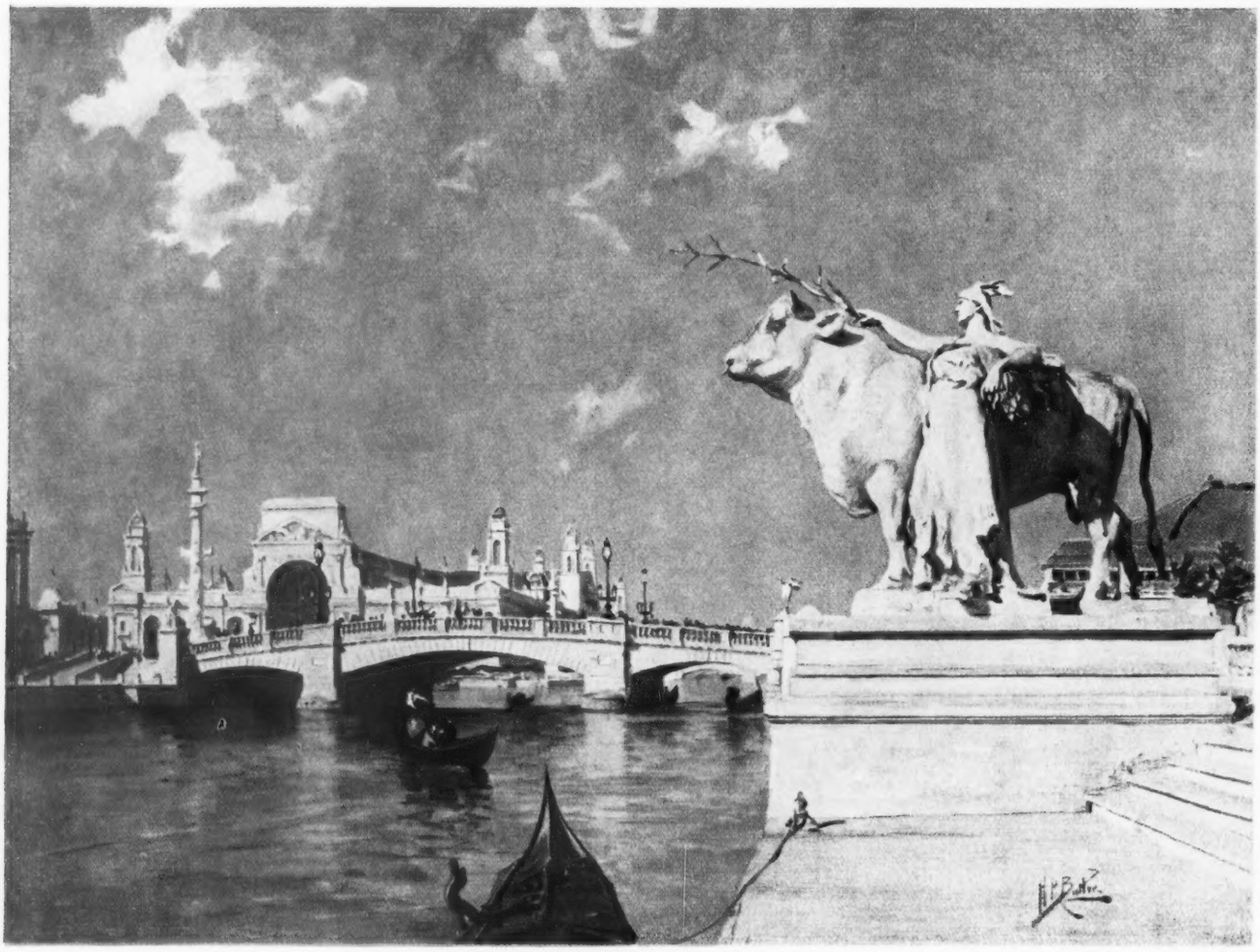
Pencil Points is indexed regularly in The Art Index.

GLASS

LIBBEY-OWENS-FORD GLASS COMPANY, TOLEDO, OHIO, manufacturers of Highest Quality Flat Drawn Window Glass, Polished Plate Glass and Safety Glass; also distributors of Figured and Wire Glass manufactured by the Blue Ridge Glass Corp. of Kingsport, Tenn.

Although the cost of glass constitutes but a very small fraction of the cost of construction the quality of glass influences the appearance of a building perhaps more than any other single item . . . especially so when glass is used so profusely as it is in following the modern architectural trend. Bright, clear glass that gives even reflections emphasizes and enhances every other feature of design and creates an atmosphere that it is impossible to achieve by any other means. The fact that L·O·F Polished Plate Glass and Improved Quality Window Glass are used so generously in so many important pieces of construction is evidence of their superior quality. For details, refer to Sweet's Catalogues or to any Libbey·Owens·Ford district sales office listed therein.

LIBBEY·OWENS·FORD
QUALITY GLASS



ALONG THE GRAND CANAL—THE COURT OF HONOR, THE WORLD'S FAIR—1893—CHICAGO, ILLINOIS

CHARLES B. ATWOOD, CHIEF OF DESIGN OF THE EXPOSITION—FROM AN OIL PAINTING BY H. R. BUTLER

It was thought timely, on the occasion of the opening of the Century of Progress Exposition, to reproduce this painting showing a view of the Grand Canal at the Chicago World's Fair and Columbian Exposition of 1893. The original painting, which measured 30" x 22", is in the collection of W. B. Hunter, Architect, of New Rochelle, New York, through whose courtesy we are permitted to reproduce it. It is not only of historical interest but provides for students of color a good example of architectural color composition in oils.

PENCIL POINTS
(June, 1933)

PENCIL POINTS

Volume XIV June, 1933 Number 6

Chicago and Tomorrow's House?

By Frank Chouteau Brown

In the year 1893 a World's Fair was held, in the city of Chicago, that marked a turning point in the development of art in America. The Renaissance inspired architecture shown in the principal buildings of that Fair, reflected in the formal lagoons and harmonious landscaping treatment of the ample grounds, impressed all beholders with a distinct vision of beauty that was one of the most permanent and important recollections remaining from their visit of that year. It therefore naturally resulted that much of the architecture of immediately following years was distinctly influenced by the Classical style so impressively employed at Chicago in the Columbian Exposition. It everafter remains as an indissoluble part of the memory-vision of that summer in the minds of thousands and millions of Americans.

And now, again, in the summer of this year of 1933, the city of Chicago is setting up another "Fair," and again "inviting the World"—just at the moment a somewhat groggy and dizzy World—to come, look, and wonder. Another ideal of artistic character is to be set before the visitors, including many Americans. Another generation—in fact, some three or four of them—are looking forward to attending and being impressed by a new and more "advanced" idea of beauty. A strangely different meaning is being given the same old syllables; even the older generations may return again to consider the two contrasting standards —and, perhaps, to ponder!

For the strongest effect of that previous picture had been to give the nation an ideal of beauty best and most directly expressed in structures of a type nearly analogous to the "public building"—and America was at that very moment entering upon an era of the construction of such buildings.

What is to be the influence of this current "Fair" upon those who will attend it? They will see more and newer beauties of lighting and of developed and applied electricity; less static and old-world Classical architecture, for which has been substituted a new and probably transitory architectural ideal; less permanency of appearance; perhaps more economical and direct expression of material and purpose. They will probably see better "Fair buildings," as such, better adapted to and more expressive of their intended purpose, but still largely European in their derivation and still often substituting the merely bizarre and unusual for the intended modern and direct expression.

And what is that problem in architecture that most concerns the greatest number of people in America—or possibly in "all the world"—at the present time? Undoubtedly, it is that concerned with the building of a home that will be permanent, convenient, and attractive; and at a price that the less well-paid majority of the people can afford to pay! We commonly use the word "Housing" to represent this problem, although that term is employed far too vaguely, and often without any too exact definition of what we mean by its use, or even any certitude that we fully comprehend the idea that it presents.

But that, at the present time, even greater numbers of the American people than usual are becoming absorbed by the problem of securing homes at prices they can afford to pay, there can be no doubt. That a proper and widely available solution is fundamentally essential at this time, especially as an underlying or basic ideal of American "standards of living," is also readily granted. That a large majority of the Chicago visitors will be extremely sensitive to ideas dealing with economically successful types of single-family dwellings is a foregone conclusion. Therefore, if the "sample houses" now being completed at the Fair are properly presented by the several manufacturers concerned and made sufficiently attractive to reach and intrigue the visitors, this exhibit may become important in marking a point from which the future treatment of the detached single-family American home may take on a different type of development that may become traceable far into the future. Whereas the former "World's Fair" gave to America a better and more impressive type of public building design, will it turn out to be a fact that the Fair of this year will establish any new standard of advanced house design?—at the moment undoubtedly one of our most eagerly awaited products! Is it possible that we are actually developing new building materials more cheaply and better adapted to meeting the requirements of our varied climate, as well as the needs of the home builder and owner of the present and future generations? If so, that fact will be welcomed by a large proportion of our present population, and it should be a matter of intense and vital interest to the architect, as well as to all others included within the many trades associated with the building industry.

That the possibilities are as completely revolutionary as those that affected the amusement "business" of this

country when the change from the silent to the vocal movie became an accepted fact, should be evident to all who have been cognizant of the conditions still existing to affect our entire building industry. At this particular moment, everyone concerned is "waiting to be shown" any among the many experimental new building products that will be cheaper, as well adapted, as easily distributed, and as flexible as those building materials to which everyone has hitherto been accustomed. Once any such new materials have been accepted as meeting these essentials—have been proved as being as adaptable to meet requirements of weather resistance, wearing qualities, permanence, and ease of handling, along with cheapness of manufacture and distribution—the architects of the country will soon discover ways and means of using them that will be economic, simple, and beautiful. Of that, there can be no reasonable question or doubt. But it is these inventions that, at the moment, are still being awaited!

No builder considers present labor-wasting materials as ideal. They require the application of too many individual pieces to be economical—no matter how cheaply manufactured each unit may be. No architect regards the resulting surfaces—full of lapping edges, or crevices, or joints—as ideal in appearance. Long usage has accustomed the human eye and mind to their defects and incongruities. They have proved in practice to be flexible and adaptable, as well as sufficiently permanent and artistic in effect. As a matter of fact, the permanence is only achieved by means of continued expense for painting or pointing the surfaces and crevices which are accepted as sufficiently artistic in effect only through long custom, and by making essential defects in the materials the means of securing pleasing minor variations, along with the inherent harmonious effect of human scale and relation to the human beings who inhabit these man-made dwellings!

Most existing materials have finally come to possess historic associations of style not essentially inherent in them originally but gradually acquired—"unearned increment," as it were—through generations and centuries of use in many lands and widely different climates. But it should also be plainly realized that these long established "style associations" are not in themselves really inherent, but merely those that we have come to associate with them. Most certainly it does not mean that these familiar materials are not susceptible of being used in new ways, nor that it is not possible to adapt them to meet new conditions. In fact, history furnishes us with many instances in which they have been very successfully so adapted.

More definitely it should be stated that a so-called "modern" or "new" style does not *require* the invention of new materials. According to history, at least, it never has in the past. Therefore, in all probability it need not be a requisite essential for the present nor the future, though we have been rather prone so to regard the matter. It *does*, however, require a certain freshness of outlook; an ability to break away from established or conventional lines or directions of thought; an originality of approach upon the part of its designer.

It might also be that the invention of a new building material *might* just conceivably (possibly because of some essential newness of principle or application involved) be the basis of suggesting some new method of applying that material to the more pressing problems confronting architecture of today and tomorrow, from which we might develop some new suggestion of appropriate "style" as an almost inevitable by-product. On the other hand, it is more than likely that a new style evolved from the invention of a single new material would not be broad enough in its application to the problems involved in the art of building to cause it to be suitable to meet all the requirements of modern architectural design.

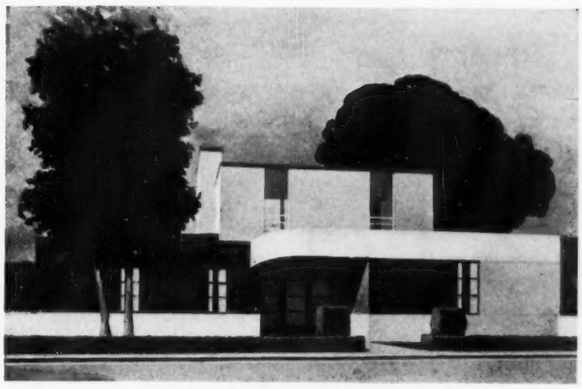
Rather it would appear more consistent and desirable that any new style of design—if it evolved—should arise naturally from new and more logical methods of thinking, or in confronting new problems of economic construction, without being trammelled by existing historic architectural precedent—or limited by the possibility of realizing it exclusively in a single new material!

As a matter of fact, in the construction of modern buildings we have for some time been cognizant of the economic logic of a preferred use of larger units of factory-made material, capable of being set in place more simply and quickly—and at an economy of labor—because they would cover a larger surface per operation upon the structure's façade. Yet we have not so far—even after several years of confrontation of this fact—been inspired to produce a new and logically inevitable "style-solution" such as would be generally accepted as wide in its applicability and satisfactory in its economic and artistic possibilities.

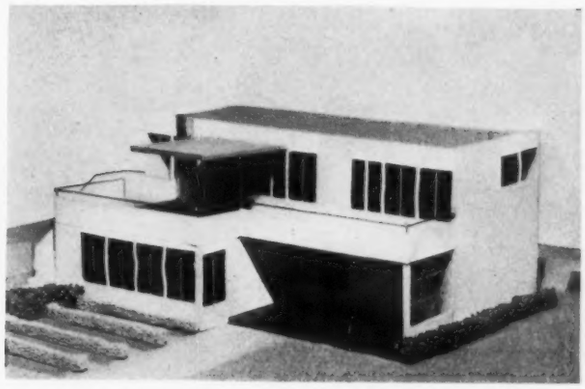
If pre-fabricated products can be devised for machine-shaping in units capable of being economically transported to a site, and rapidly erected with inexpensive labor, in a few uncomplicated operations, into a house that is satisfactory in appearance, durable, practical, and flexible in material and arrangement, there is no doubt that it would meet a long expressed demand and prove a much desired boon to families, factories, and communities scattered all over this, as well as many other countries.

It is toward this end that many material manufacturers have been working, and so at Chicago an area upon the lake front has been placed at the disposal of these interests. A limited number have each actually erected and decorated a demonstration house, showing the possibilities of their materials in a form that can be readily seen and realized by all visitors who may be interested in that problem. And so ten or a dozen houses, some of which are here shown or described, are now built and their furnishing and decoration is being completed.

Already it appears obvious that, artistically, still far too much is left to be desired. Probably few will be willing to accept even a single one of these house designs as being altogether satisfying and beautiful in this regard. Others are too novel in shape or form or material to be generally acceptable to the normal home owner. Everyone could wish that the number had



MASONITE HOUSE
Frazier & Raftery, Architects



DESIGN FOR LIVING
By John C. B. Moore and Horsley & Wood

been larger and that more materials and different types of design, now lacking, had also been included in the group. It is probably obvious that more architects—and some accepted architectural organization—should have been invited to undertake the whole matter—and upon a broader basis than has actually been done.

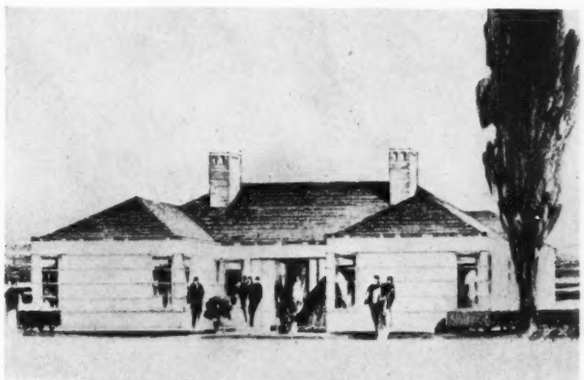
Almost one's first reaction, after glancing over these designs, is to feel that more thought and better minds are yet needed before we can achieve the best realization of the possibilities lying dormant in these various materials. No matter how well justified experience may prove these inventions to have been, a great opportunity to have caused thousands of people to have realized that fact, within a very limited time, has been partly lost because of the failure to have these same ideas presented in the most effectively artistic and dramatic manner, *this* summer, at *this* Fair.

Too many spectators will be likely merely to jump to the conclusion that what is here being shown is representative; that if that is the best that can be done in the field of new ideas in economic home building, back to the old love for theirs! A conclusion that must be regarded as based upon unfortunately false premises. And one that can hardly redound to the immediate benefit of the industry of the building of homes—a matter at the moment of vital import to all North America, far exceeding the interests of the few manufacturers here involved!

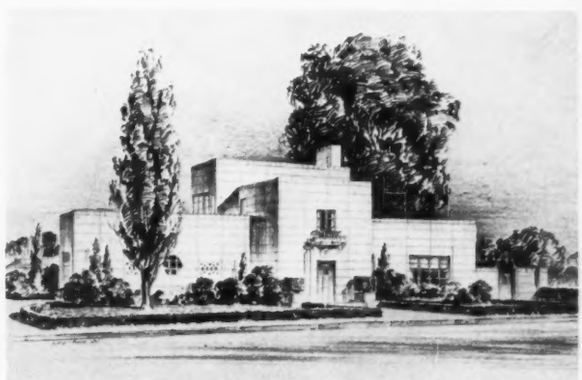
For it is a definite and certain fact that one of the very first expressions of a return of business to better times in this country will be noted in the start of building of small houses.

It is perhaps natural that most of the houses built at the "Fair" have been expressed in a style that we have mistakenly come to call "modern"—an appealing but often meaningless word. It is supposed to represent that appearance that results naturally from a more direct and logical use of materials. As a matter of fact, it seldom accomplishes anything of the kind! It is no more representative of the methods, materials, or manners of the present day than were the Renaissance palaces shown in Chicago in the Fair of forty years ago representative of the America—or even the Europe—of *that* time! They were interesting and romantically appealing to the visitor from the fact that their beauty was of a type that was rare and new to him. They represented, however, nothing of the purpose of the structure, nor of its methods of construction.

The Fair of 1933 will show some exposed methods of structural support, it is true—though hardly in ways that will be universally accepted as inherently beautiful. Some of these houses may be recognizable as human habitations, though usually of a form that will be strange to most visitors. Others will not at first so suggest themselves to the observer. But at least it would seem a little unfortunate for the manufacturer that, in some cases, his material—often quite capable of well merited use in construction of the day—should



AMERICAN FOREST PRODUCTS HOUSE
Ernest A. Grunsfeld, Jr., Architect



ROSTONE HOUSE
Walter Scholer, Architect

FLORIDA TROPICAL HOUSE
Robert Law Weed, Architect

STRAN-STEEL HOUSE
O'Dell & Rowland, Architects

have been thus first presented to a possible buying public in a manner that must confuse the issue for many observers and leave them with a confused notion that the strangeness of the house forms in which they are being shown is something essential to the materials employed, rather than as merely incidental to them. In this way their adoption may be unduly, and unfortunately, restricted.

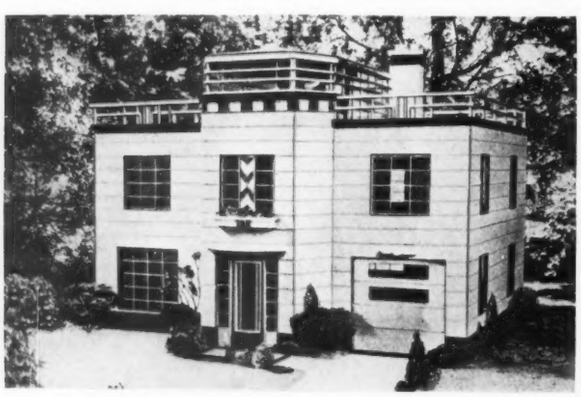
For one thing, no apology need be made. Outdoor life is coming more and more to form an important part of present-day living. That fact is apparent in many of these designs. It appears generally in the flat roofs; and the substitution of "roof gardens" for older fashioned "porches" is a mere reversal to oriental and even pre-Biblical times and manners. It is even older than it is "new"! It goes back to the architecture of Egypt, Persia, the "hanging gardens" of Babylon! As so often happens, it is historically so ancient that it has once more become "new."

Of the houses illustrated, two comply with most of the recognized peculiarities of the Continental "Architecture Moderne" in their design. These are the "Masonite House," by Frazier & Raftery and the "Design for Living," by John C. B. Moore, with Horsley & Wood, Associated.

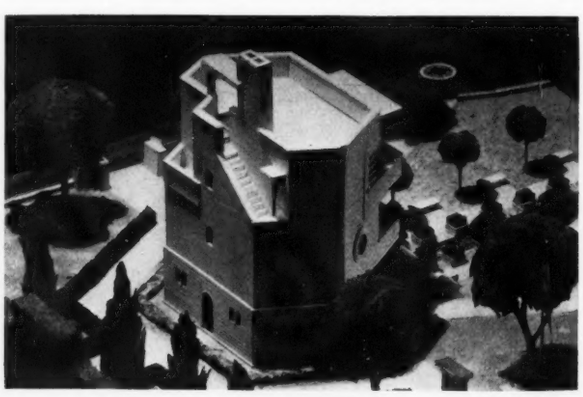
The first-named design places four rooms upon one floor, with a hall of seemingly unnecessarily large area to serve any useful purpose. A considerable economy easily might be effected by reducing its size, opening it more out into the Living Room, and so making a considerable reduction in the area, and accordingly the cost, of this design. A serving pantry between Kitchen and Dining Bay would also seem authorized in so ample a plan. The Living Room, 21 x 25 x 12 feet high, is not especially well proportioned. What appears in the perspective as a second story is merely a roofed terrace, with enclosed staircase hall carried up to that level, leaving a considerable area of open housetop for the use of the occupants. The garage is given space upon what is shown as the west (front) of the house. It would appear that the entire usefulness of the house would be bettered by orienting the front to the north. Along with most of the other houses illustrated, no cellar is contemplated. The construction is not startlingly novel, being of wood studs covered with Masonite and plywood panels; and the exterior suggests the excellent possibilities of variety obtained by the use of differently toned areas on the wall surface.

The "Design for Living" house plan is rather crowded upon the first floor and unexpectedly spacious upon the second. The kitchen appears too much condensed—especially as no separate china closet is provided—while the dining space is also too constricted. Upon the other hand, the irregular arrangement of the Living-Library-Dining Room possesses distinct and interesting possibilities.

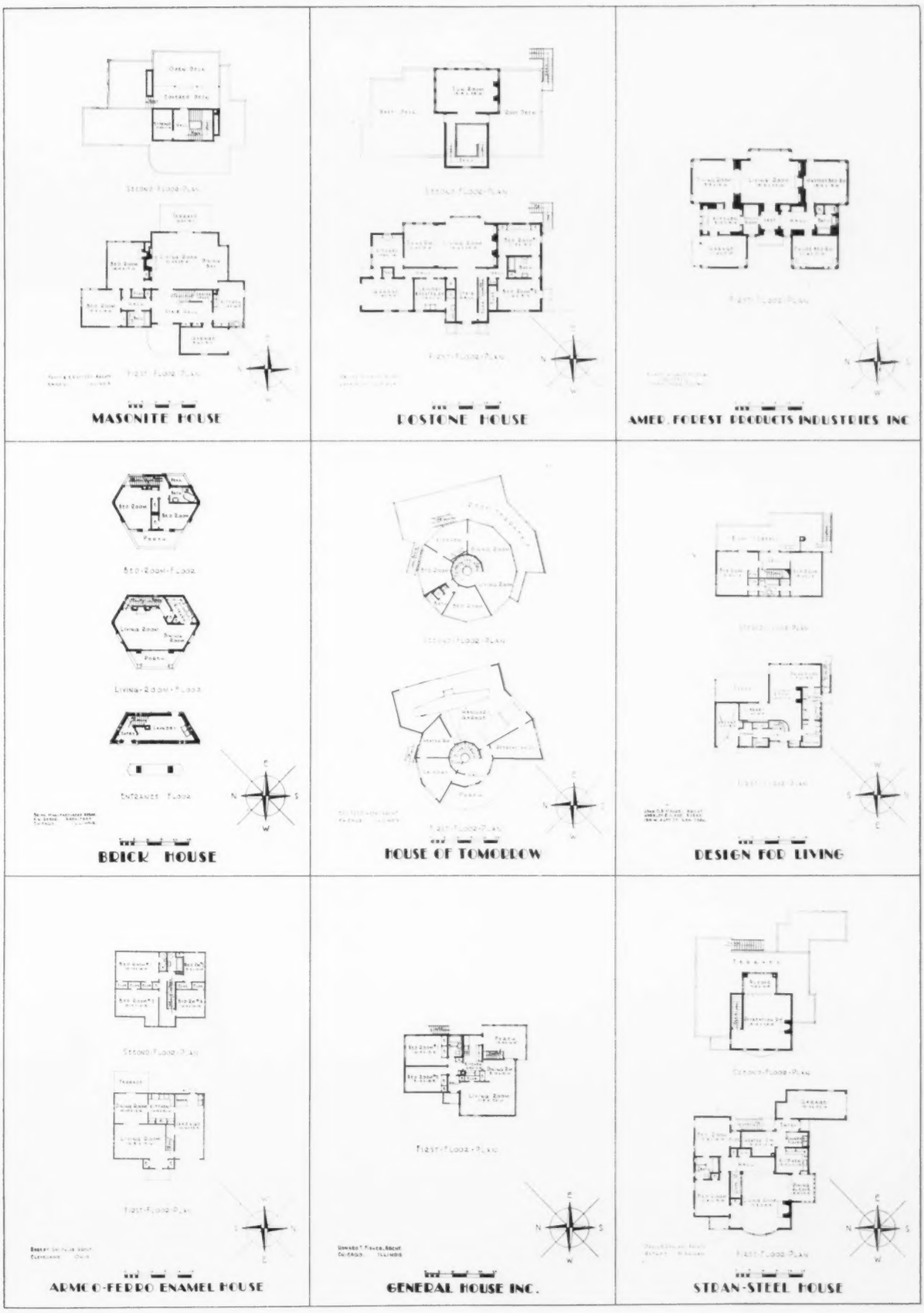
From the model, the exterior appears to be too conventionally "modern" in its stylistic expression to be



ARMCO-FERRO ENAMEL HOUSE
Robert Smith, Jr., Architect



BRICK HOUSE
Andrew Rebori, Architect



PLANS OF NINE OF THE HOUSES SHOWN AT THE FAIR

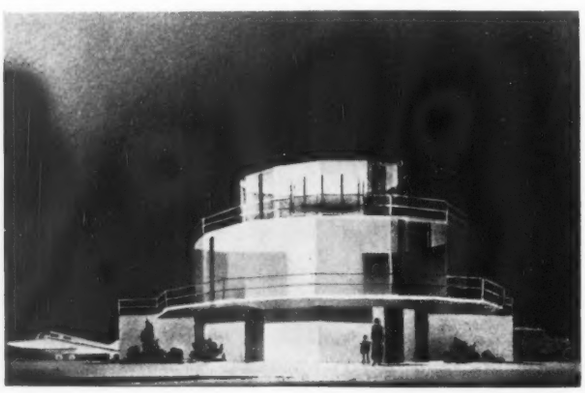
very interesting as such. The plan is based upon a four-room unit, with attached garage, and the frame is of wood stud surfaced with large "Homasote" sheets.

"The Armco-Ferro Enamel House," designed by Robert Smith, Jr., has seven rooms of rather ordinary and inflexible proportions. No frame is used, but the 3½"-thick walls are compounded of long box-like steel units, filled with rock wool, their Armco iron surfaces finished with vitreous enamel. The roof is flat, partly roofed over, and color is introduced into a few decorative panels.

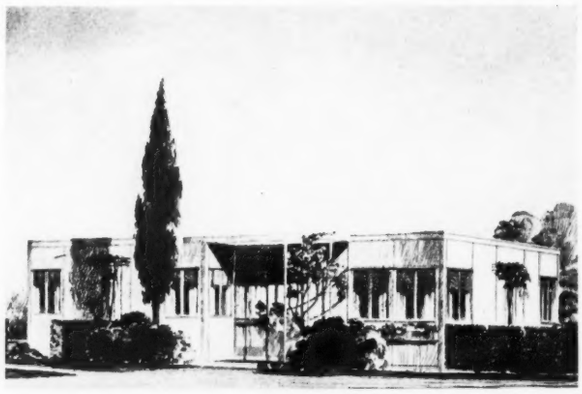
The "Stran-Steel House," O'Dell and Rowland, Architects, has a fabricated steel frame, the members being made of two channels back to back. It is surfaced by enamel finished sheet steel plates, insulated upon the outer face, and with Celotex and Sheetrock upon the interior, all nailed into place. "The estimated cost is $7900" (sic), and the house has five rooms upon one (the first) floor, with a covered and enclosed "Recreation Room" opening on the roof terraces at the second floor level. Again the orientation of the house would seem capable of being much improved by placing it with the entrance front facing the south. Its principal rooms suggest interesting decorative treatments as being possible.

The "Rostone" House, designed by Walter Scholer, is architecturally more interesting and is also of steel frame, surfaced with a thin manufactured slab material made of limestone and shale, with bolts cast into position for attachment to the steel frame. The surfaces of these slabs may be polished and given different colors and textures. The same material is used for parts of the walls, and for the floors on the roof terrace and hall. Six rooms are arranged on one floor, with sun-room and hall continued to the roof story. The plan—which can hardly be regarded as an economical one—would probably work out better if reversed and faced to the north. A much better planned Rostone house, designed by the same architect, has been built at West Lafayette, Indiana.

The "General House, Inc.," Howard T. Fisher, Architect, is another design to be built of steel units, without frame, at about $3500 for a four-room, and $4000 for a five-room plan, all on one floor, with flat roof deck. The structural scheme for this house is based upon a steel chassis bolted over cement piers,



HOUSE OF TOMORROW
George Fred Keck, Architect

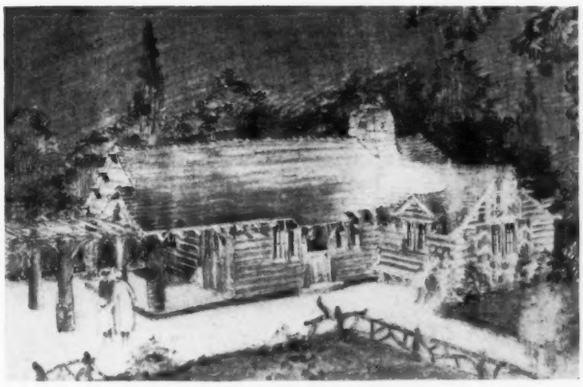


GENERAL HOUSE, INC.
Howard T. Fisher, Architect

with sectional wall portions bolted to them, as well as to the roof, with interior surfaces of finished insulation panels, decorated to meet the owner's desires—and the exterior wall face of pressed steel panels with interior partitions of sound-deadened insulation panels showing upon both faces. This expresses the most mechanical of all the designs shown, both in exterior and in plan, with no pretense to or recognition of elements of either design or attractive appearance. And its plan expresses only the most ordinary pretenses toward commonplace "efficiency" to recommend it.

"The American Forest Products Industries, Inc.," is one of the two houses in the group to show a sloping roof. It has five rooms, all on one floor, and why so much space is used up in interior wall thickness does not appear—unless wall cupboard space is thus to be provided! Otherwise the plan might be improved by opening into one area the space now apparently wasted at the right of the entrance. This plan also would seem better oriented if faced to the north. The usual wood frame is employed, surfaced outside with wide redwood boarding, and all the interior wall surfaces are made up of panels of differently selected and treated woods. Its cost is estimated at $4500 and it was designed by Ernest A. Grunsfeld, Jr.

The house erected by the Southern Cypress Manufacturers Association, "Hetherington, Architects," is not much different—in anything except possibly the kind of wood employed—than most "log cabins," in its architectural design. The type is already well established and known, and is both appropriate and adaptable to certain locations—usually limited to those in which the logs to be employed may be cut most logically and economically from the site itself. It is also usual that when the log material—because of its bulk and weight in transportation—has to be brought to the site over considerable distances, both the increase in cost is considerable and the house less adapted to being appropriate upon its site. In such a case, the material—cypress—would undoubtedly be better adapted to its location, if used in the form of the old handsplit cypress shingle or southern "shake," than which no other material weathers as beautifully or lasts as long, and upon which the transportation cost would be reduced to minimum weight and bulk.



SOUTHERN CYPRESS HOUSE
Hetherington, Architects

The advantages of cypress, as a material, should be familiar already to every architect. It is adapted to expression in many types of pleasing and informal architectural design, whereas the "log cabin" is much more restricted in its applicability to use as a dwelling, except as a "hunting lodge," and it can hardly appear to great advantage upon the open and treeless spaces of the "Lake Front" at Chicago.

"The Tropical Home," by Robert Law Weed, Architect, is an exhibit prepared by the State of Florida, using Florida materials so far as possible in its construction and decoration, and is so placed upon a somewhat different basis than the other dwellings that have been reproduced. It is also intended to appeal to people of means, the cost being "approximated at $25,000." The plan is not available for consideration, but it is obvious that the dwelling is ample in area, the Living Room is two stories in height and much use is made of Travertine stone, the local coral rock, colored Spanish tilework, and ironwork on stairs and balconies. The Dining Room is even partly lighted through an aquarium along one wall, and other unusual tropical and attractive features are to be exhibited by the State by means of this dwelling that is intended to place before wealthy visitors some of the advantages of wintering in the Florida climate.

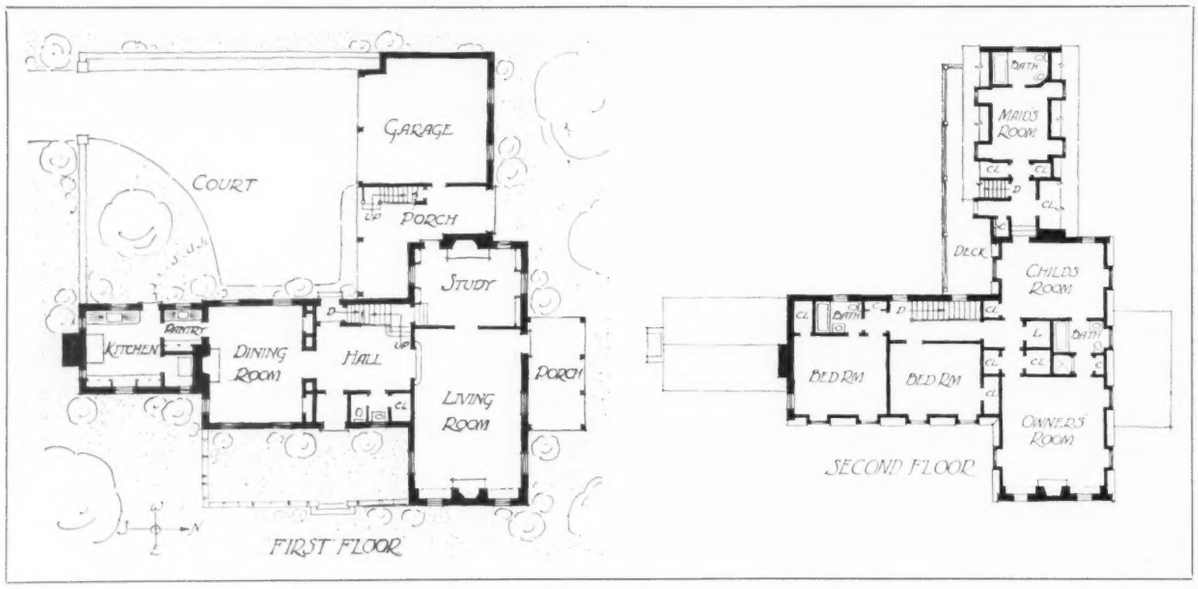
The next two plans are intended to display the uses of one of the oldest and most usual, as against perhaps the most unconventional, of all the materials and wall treatments advocated. "The Brick House," designed by Andrew Rebori, is "estimated" at $4500. "The House of Tomorrow," perhaps wisely, does not undertake to enter into the realm of conjecture so far. The unnecessary height and unusual irregularity of angles indulged in by this "Brick House" plan seem especially unnecessary and undesirable in an example supposedly intended to show the place that so historic and old a material as brick may still maintain in a "modern" type of house. Both its extreme height and the many odd angles and irregularities indulged in cannot help but increase the cost of construction of this example far above the amount given. "Reinforced brick" construction—the name given to a recently revived treatment, involving the introduction of small steel rods in the joints between the bricks to stiffen the construction against load or pressure—is susceptible of much merited and advantageous use once its principles have become more widely known to the profession, but it appears extremely doubtful if this example is a well advised way to display it to architect or home builder.

It is the intention to expose the brick construction on walls, floors and ceilings, inside and outside the structure. It has what is the equivalent of a four-room plan, with a laundry and basement upon the ground floor, and two additional stories placed above that. Whether any possible exposure could be suited or adapted to the peculiar arrangement of the windows and blank wall spaces shown upon these plans may be doubtful, but most certainly the experiment here tried, that of "facing" it to the west, is hardly successful.

"The House of Tomorrow," by George Fred Keck, obviously breaks so entirely with precedent, both as to form and material, that we have at least no complications—such as of "adaptation to site," or anything of that sort, to trouble us. As in the case of the "General House," all you have to do is to look at your catalog, order House No. 13, and let it go at that. It can look no better, whichever way you face it, and in this particular example it makes no particular difference on which of its twelve "faces" you approach it.

The second-floor plan seems a trifle old-fashioned and incompatible with modern ideas. Or perhaps this is merely another good old custom that has come around to be used again. Upon this floor all traffic is apparently routed from the hall and stairway through the Living and Dining Rooms, then the Kitchen (and we *have* known some housewives who would object to this!) and next Bedroom (A) to the Bathroom. Well, that may be the regular and accepted thing when living in glass houses—and is probably all right, so far as our own somewhat limited experience goes in the matter, we are unable to contradict it. But there is the occasional house guest *also* to be considered! He—or she—has also to follow the same circulatory route, and after traversing the inner, or more shadowed, end of the bathroom, he—or she—is at last able to enter his—or her—own habitat, Bedroom (B)! And the entire process would appear also to be followed naturally, not to say inevitably, reversed, before breakfast! This economy or simplification of plan, we seem to remember, has also its European precedent, being very popular indeed in the times of the later Louis', as still exemplified in the plans of Versailles, the Luxembourg, and other *grands maisons* of the period, when—to reach some more remote bedroom its occupant had to stroll through all the bedrooms in between—and we had ourselves always regarded it as having had something to do with the rather promiscuous habits that history tells us were indulged in by these same monarchs, along with some of their Court. But perhaps we are wrong, and overly suspicious. It may have been that the inhabitants of these princely precincts were merely going through a course of preliminary training for their reincarnation in these coming "tomorrows"—when we may all have to reconcile ourselves to the inconveniences (or conveniences—depending altogether upon how you may regard the matter!) of living in this kind of house.

A Present-day Residence Design Based on Early American Precedent



RESIDENCE FOR DR. HERBERT C. JONES, PETERSBURG, VIRGINIA

WILLIAM F. DREWRY, JR., ARCHITECT

Rendering by J. Floyd Yewell

THE MONOGRAPH SERIES

RECORDS OF EARLY AMERICAN ARCHITECTURE
AS SOURCE MATERIAL

EDITED BY RUSSELL F. WHITEHEAD, A·I·A

VOLUME XIX

MONOGRAPH THREE

Garrison Houses Along the New England Frontier

BY STUART BARTLETT

Photographs by Arthur C. Haskell

The "Garrison House" of the Northern Colonies was a distinct type developed to meet the needs of the various communities scattered along the border in the period of the King Philip and the several French and Indian Wars. Except the brief unpleasantness, sometimes called the Pequot War, in 1637, and two short periods of Indian raiding in 1642 and '53, most of the local Indian tribes remained on friendly terms with the settlers, until 1675, when King Philip's War broke out in June, in Plymouth County, Massachusetts. This was the first occasion for any general provision being made to protect the lives of the settlers from human enemies, and its real seriousness is indicated by the fact that during the fighting of 1675 through 1677 over six hundred colonists lost their lives, and an even larger number of homes were burned and destroyed; a very considerable drain upon the population and prosperity of the Northern New England settlements at that time.

Following a dozen years of peace, another struggle began—often called King William's War—and continued from about 1688 or '90 to 1697 or '98. The Indians now came from farther afield, and were backed and instigated by the French in Canada. After a brief peace, from 1699 to 1703, Queen Anne's War broke out and waged until July of 1713, followed by another war with the French and Indians, known as Dummer's War, which lasted until the summer of 1726, when peace was signed at Falmouth (Portland) in the summer of that year and lasted for about twenty years. These same hostilities are, farther north, sometimes known as "Lovewell's War," and cost the colonies £170,000.

Deerfield, on the Connecticut River, is a well known example that shows, in the close clustering of its old houses along one short village street, the effect the Indian threat exerted upon its "community plan"! (Vol. 6, No. 5, *Monograph Series.*)

Settled in 1669, the town street was laid out in 1671. Even as early as 1675, at the outbreak of the Indian Wars, it had a little over a hundred inhabitants, with Hadley and Brookfield, its nearest neighbors, nearly fifty miles away. In 1688 the town was partially fortified, and the Meeting House enclosed by a palisade. This palisade, or stockade, was a type of defense inherited from the Indians themselves and easily arranged in a country so naturally well wooded. Within this area could be gathered the live stock as well as the human beings of the surrounding community. The limits of the stockade could include some brook, spring or well; and often even a part of the garden food supply. Within this enclosed area it was also customary to provide a strong "Blockhouse" or "Garrison" to shelter better the men, women, and children—giving them space to cook, eat, and sleep under something approaching normal conditions, while a few rough "penthouses" might be provided to help protect the farm stock.

The Garrison House ordinarily had two rooms to a floor and a chimney either in the center or at one or

both ends. When the house was more than one story in height the upper walls might be of logs or plank. Sometimes the house had walls of only one story in height; sometimes there were two stories—in which case the upper always overhung the lower. The walls were built of heavy timber, cut to a usual seven inches thickness, ingeniously fitted together at the angles, and with musketry loopholes in the walls, and often one or two square "portholes" or shuttered openings about 12″ by 16″, or thereabouts, upon each front. The roofs seem to have been usually lightly built, with a heavily timbered floor in the attic which was always kept thoroughly covered with ashes or sand so that the lower part of the structure would be less apt to be ignited in case the Indians were able to set fire to the roof by means of their arrows.

The Halliday Historic Photograph Co.

"OLD INDIAN HOUSE" GARRISON,
DEERFIELD, MASSACHUSETTS

Along the northern and western boundaries of the colonies the town records and histories are filled with references as to the methods taken to protect villages and homesteads, requiring all settlers to build only within limited distances of the Garrison Houses or Churches (the first churches were often built as community houses of defense, as well!). A few fortunate communities already had—or were soon to construct—houses of brick which, because of their better resistance to fire, were at once utilized as "Garrisons" or "houses of refuge" by those living nearby. Others arranged to have such houses built, or assisted in their construction, whenever possible, selecting locations upon raised hills or knolls conveniently central to some group of settlers or settlements.

An endeavor was made to have these "Garrisons" occur at regular and fairly close intervals along the boundaries of the occupied and settled lands, or near important fords and river crossings. Meanwhile the more protected Garrison Houses continued to be occupied, with the window openings enlarged, the walls clapboarded outside for better protection against weather, and plastered for more modern convenience within, until it soon became difficult to trace their older purposes.

Structures of this characteristic type were built even in comparatively late years, and in protected communities. For instance, a "watch-house" was built in Ipswich, near the Meeting House, as late as 1745; and two of the most interesting special buildings done for purposes of defense date from 1732 and 1738, and are still to be seen at Eliot, Maine; comparatively unchanged on the interior, though the exterior has been covered with clapboards and a large barn doorway cut through the closely matched logs of the larger in order to continue its usefulness and adapt it to the more profitable and peaceful pursuit of agriculture!

But these old "log garrisons" are the most indubitable and characteristic product of the problem and the times; the best examples of the architectural adaptation of local materials to a human need; the solution of the vital problem of providing "shelter"—in its most essential form—to the early inhabitants of the settlements in New England.

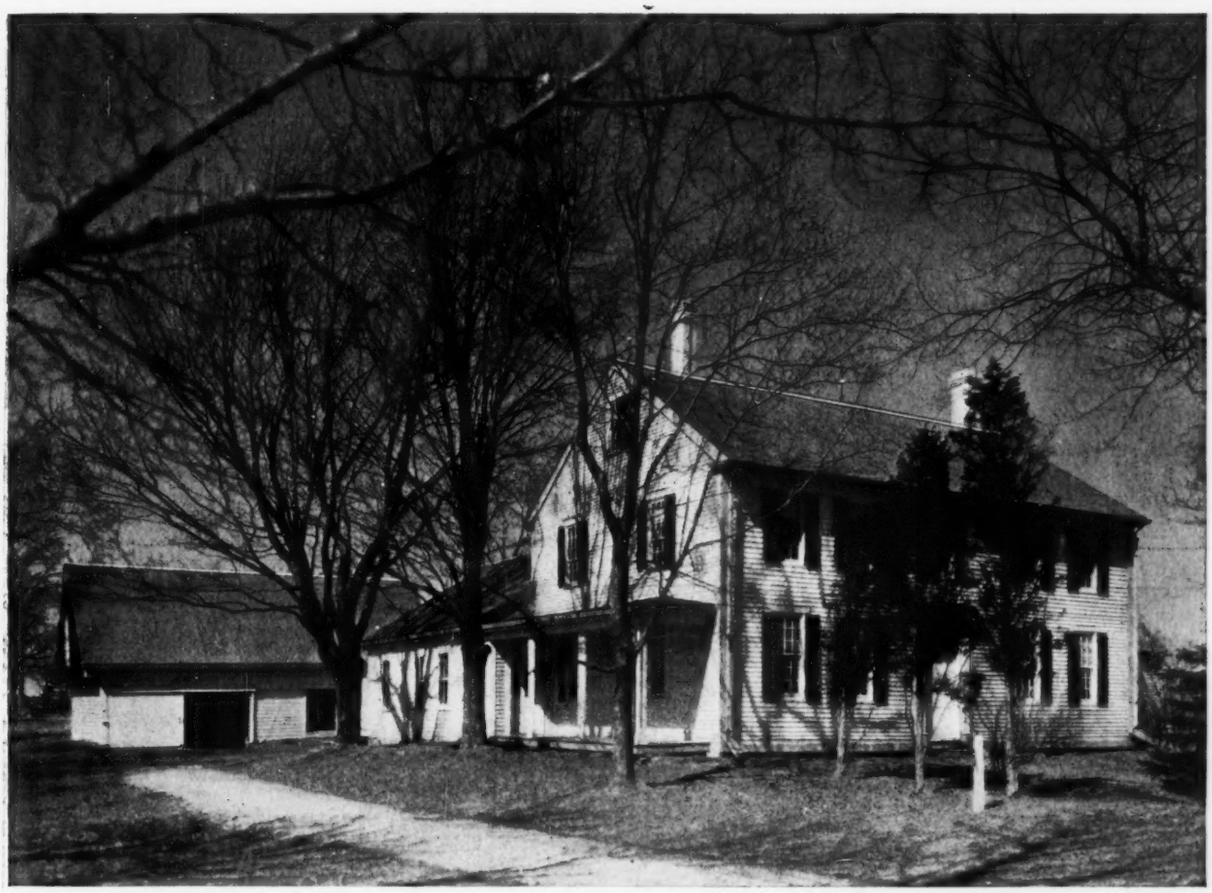
Photo by W. S. Appleton, 1910

DAM-DREW-ROUNDS GARRISON,
DOVER, NEW HAMPSHIRE

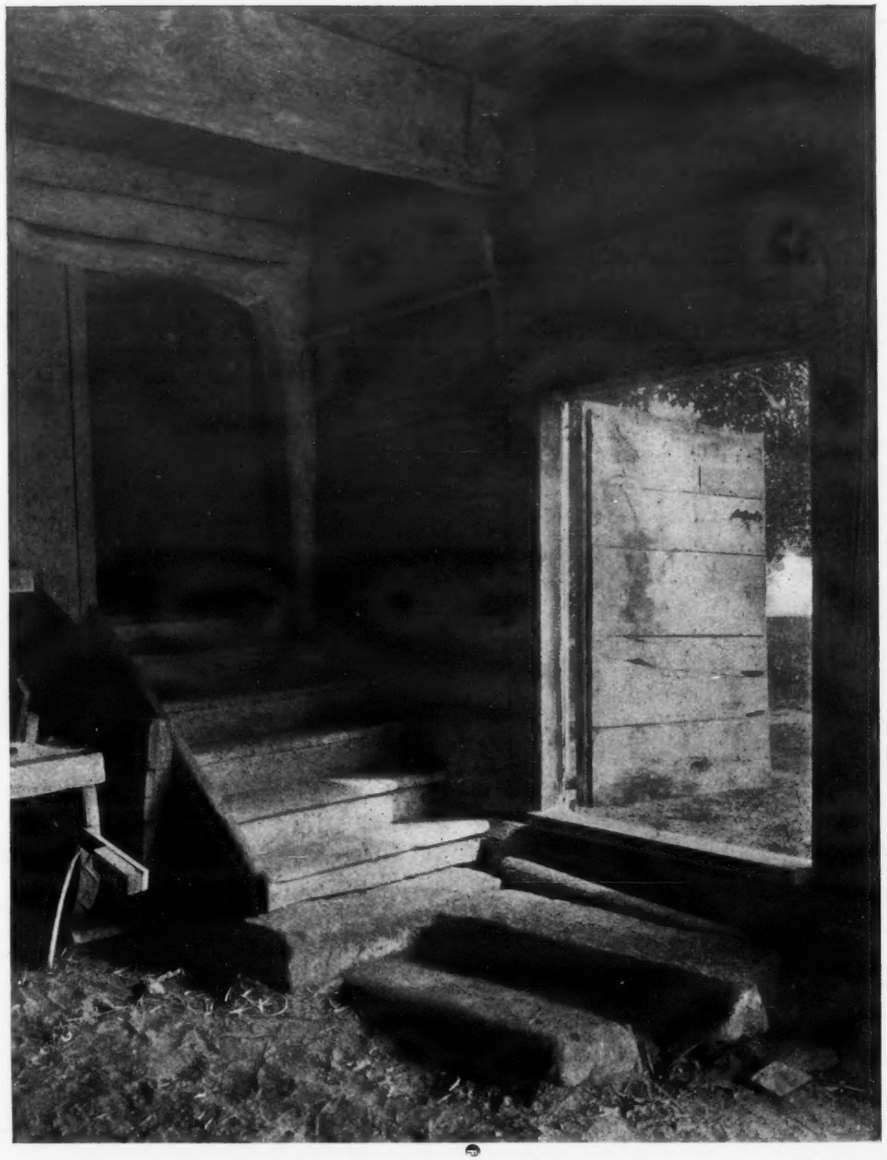
One of the oldest and most interesting of this group is the log garrison built at Exeter, N. H., by Councillor John Gilman probably between 1655 and '57. He settled in Exeter and in 1647 with his brother Edward built and operated a saw mill at "the Falls," a few

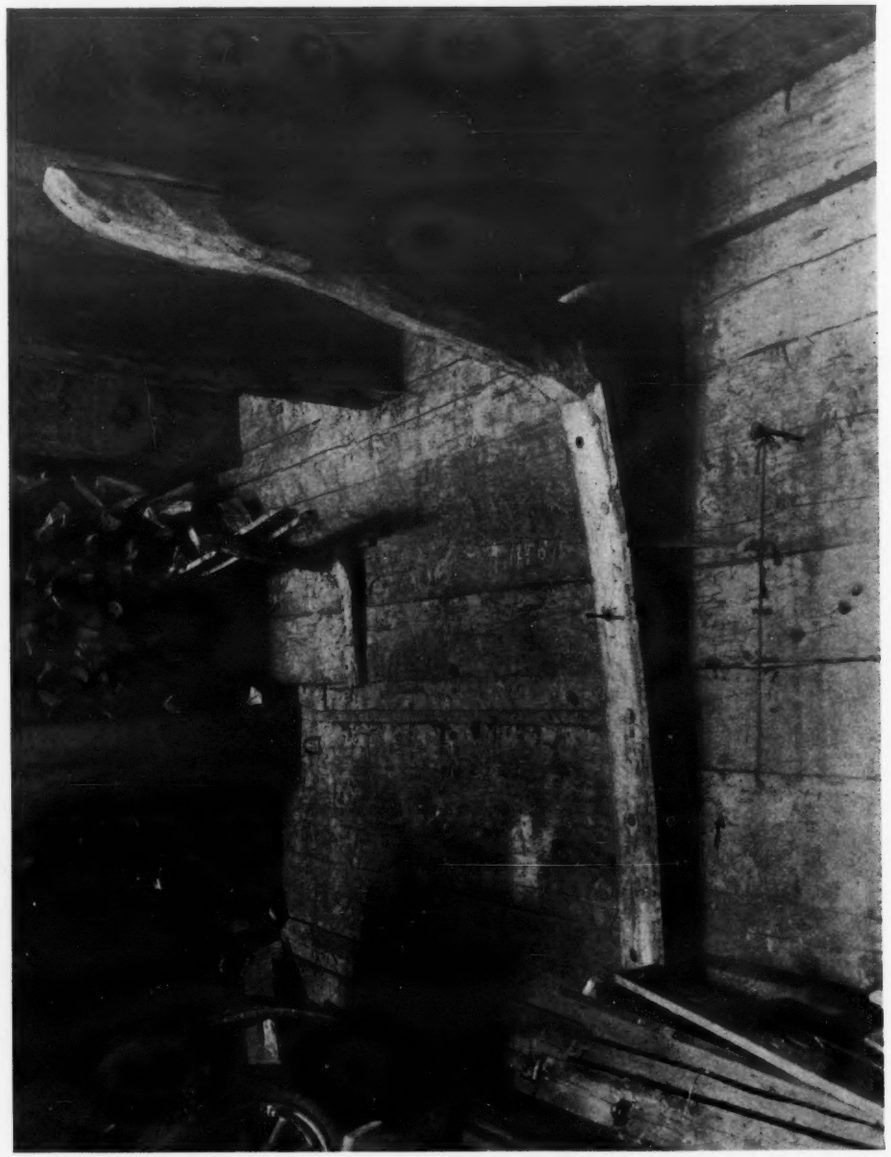
hundred feet from the house. By 1657 he had sawn out and built nearby a two-story house of oak timber seven inches thick. The first story had the logs tenoned into upright corner posts which upheld a bracketed girt, overhanging the first story about ten inches. The floor was laid across the house, using logs about six inches thick and often two feet wide, set close together; and this puncheon floor construction is still to be seen in one room of the dwelling. The second story wall was built of timber of the same thickness, but the corners were dovetailed together. The story heights were low (about 6′-6″), and if the structure originally had a central chimney, it has now disappeared. A staircase has replaced the probable early steep ladder, and evidence has existed that indicates the entrance doorway was originally protected by a sliding grill or portcullis.

By about 1750 Councillor Peter Gilman had built on an ell across the west end to entertain John Wentworth, the last of the Colonial Governors, and increased the new story heights by lowering the first floor almost two feet below the older portion and raising the second-floor ceiling. At the same time he carried the new cornice and exterior treatment entirely around the structure, raising a new roof above the old and making the top row of glass lights in the new fifteen-light second-story windows above the top of the older window openings in the old "garrison" portion of the building! A part of the plaster wall in the northwest corner room of the old Garrison, and also upon the newer stairway, has been removed so that the old timber wall of the early dwelling is exposed. The second-story room of the new ell is panelled on all four sides, although some of the rooms in the older portion contain panelled ends of earlier design and execution. In 1796, when Daniel Webster was fourteen years old and came to Exeter to study at the Academy, he lived in the rooms in the second floor, northwest corner, of the Garrison part of the dwelling, which was then known as the "Clifford" house. Another Garrison stood a short distance away on "the plains," the Janvrin Garrison, built in 1680 or earlier, but it has



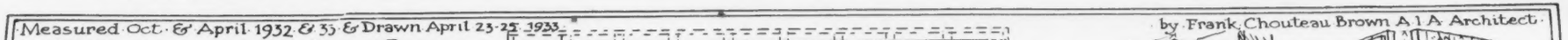
THE FROST FARM WITH GARRISON HOUSE AT REAR, EAST ELIOT, MAINE

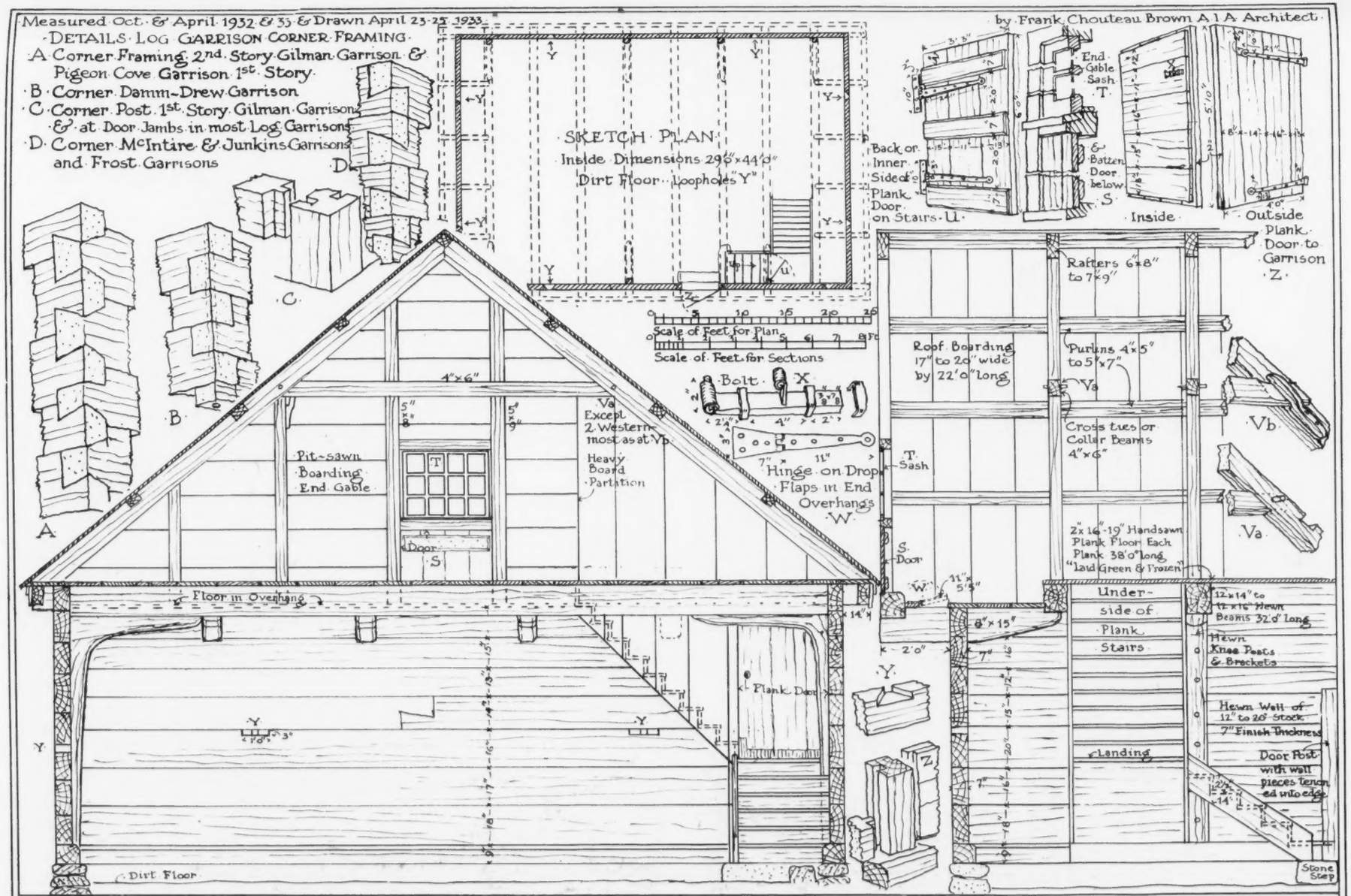




Plank Stairs and Door, Framing, etc. (See Measured Drawing Below)

THE MAJOR CHARLES FROST GARRISON HOUSE—1738—EAST ELIOT, MAINE




Measured Oct. & April 1932 & 33 & Drawn April 23-25 1933
by Frank Chouteau Brown A I A Architect
DETAILS LOG GARRISON CORNER FRAMING
A Corner Framing 2nd Story Gilman Garrison & Pigeon Cove Garrison 1st Story
B Corner Damm-Drew Garrison
C Corner Post 1st Story Gilman Garrison & at Door Jambs in most Log Garrisons
D Corner McIntire & Junkins Garrisons and Frost Garrisons
SKETCH PLAN
Inside Dimensions 29'6" x 44'0"
Dirt Floor Loopholes "Y"
Scale of Feet for Plan
Scale of Feet for Sections
Back or Inner Side of Plank Door on Stairs U
End Gable Sash T
& Batten Door below S
Inside
Outside Plank Door to Garrison Z
Rafters 6"x8" to 7"x9"
Roof Boarding 17" to 20" wide by 22'0" long
Purlins 4"x5" to 5"x7"
Va
Vb
Cross ties or Collar Beams 4"x6"
Bolt X
Hinge on Drop Flaps in End Overhangs W
T Sash
S Door
2"x14"-19" Handsawn Plank Floor Each Plank 38'0" long "laid Green & Frozen"
Under-side of Plank Stairs
12"x14" to 12"x16" Hewn Beams 32'0" long
Hewn Knee Posts & Brackets
Hewn Wall of 12" to 20" Stock 7" Finish Thickness
Door Post with wall pieces tenoned into edge
Landing
Stone Step
Pit-sawn Boarding End Gable
Heavy Board Partition
Va Except 2 Western most as at Vb
Floor in Overhang
Plank Door
Dirt Floor
A
B
C
D
SECTIONS PLAN & STRUCTURAL DETAILS OF THE LARGER OF THE TWO GARRISONS 1738 (THE SMALLER BUILT IN 1732) OF MAJOR CHARLES FROST AT EAST ELIOT MAINE

been so changed as to have lost all its old character. It had "planked walls."

In the Woodman Institute, at Dover, may still be seen the old Dam-Drew Garrison House, which was built by William Dam, son of Deacon John Dam, in 1675, in the "Back River" District in Dover Neck, about three miles south of Dover. It was removed to its present location in 1916. It is a one-story squared-log structure, 42′ by 24′6″, with a foot-wide overhang, carrying an 8″ by 19″ projecting plate against which the rafters rest. It was occupied continuously until after the Civil War, when the weather began to get at the pins and corner notches (which were not cut on a slope to throw out the rain, as in most structures of this type). Hackmatack seems to have been the principal material from which the logs were squared. The chimney has been rebuilt —of smaller bricks than the original—but the interior partitions and arrangement have been retained, so that the visitor may here obtain as good an idea of the Garrison log type as it is now possible to secure. Both the loopholes, and small openings about 10″ by 12″, are easily found.

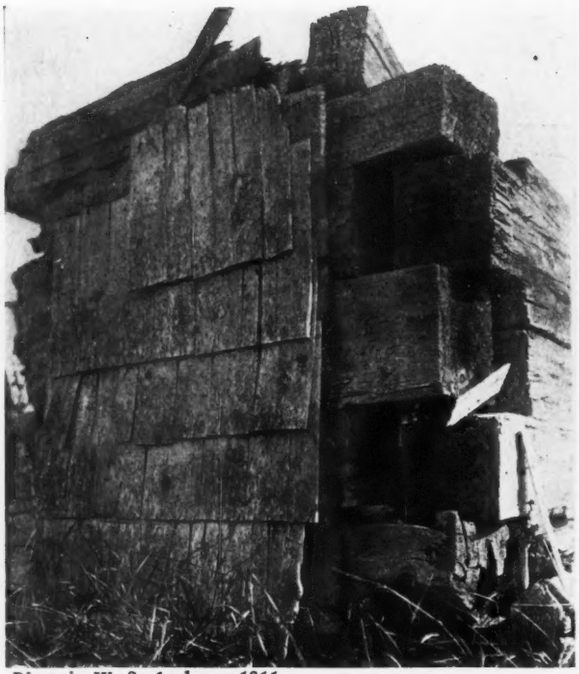
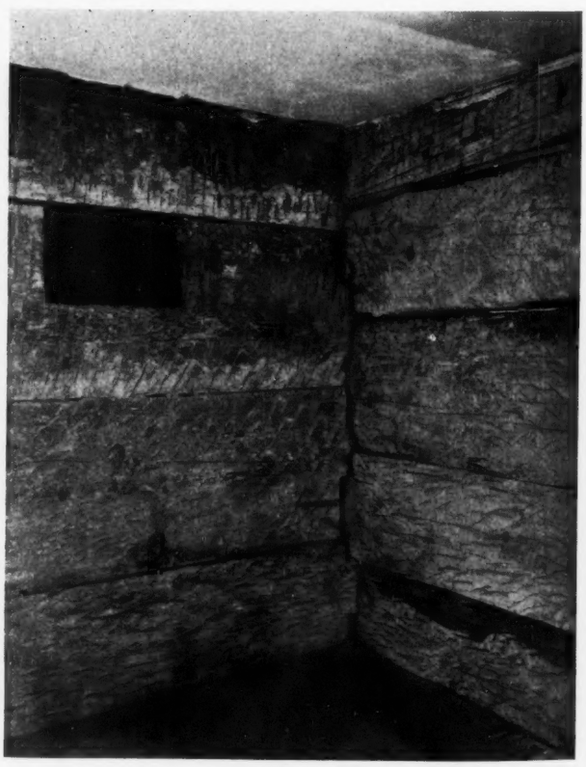


Photo by W. S. Appleton, 1911

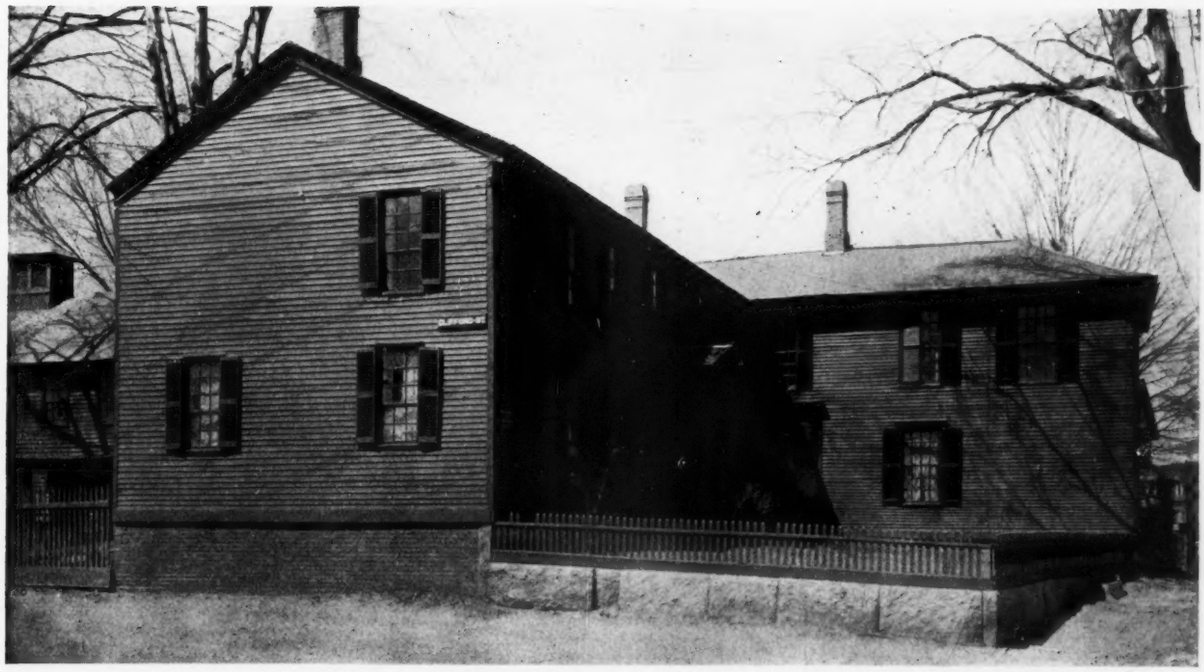
BUNKER GARRISON HOUSE, DURHAM, N. H.

Log Post or External Corner Angle of First Floor Framing. The Lower Part of 2nd Story Corner Framing (Dovetailed) Appears at Upper Right-hand Corner.



Inside of Exterior Corner, 2nd Floor Room. The Log in Which the Square Opening is Cut is About 21" High x 7" Thick. Sawn Log Faces Were Later Hacked to Hold Plaster.

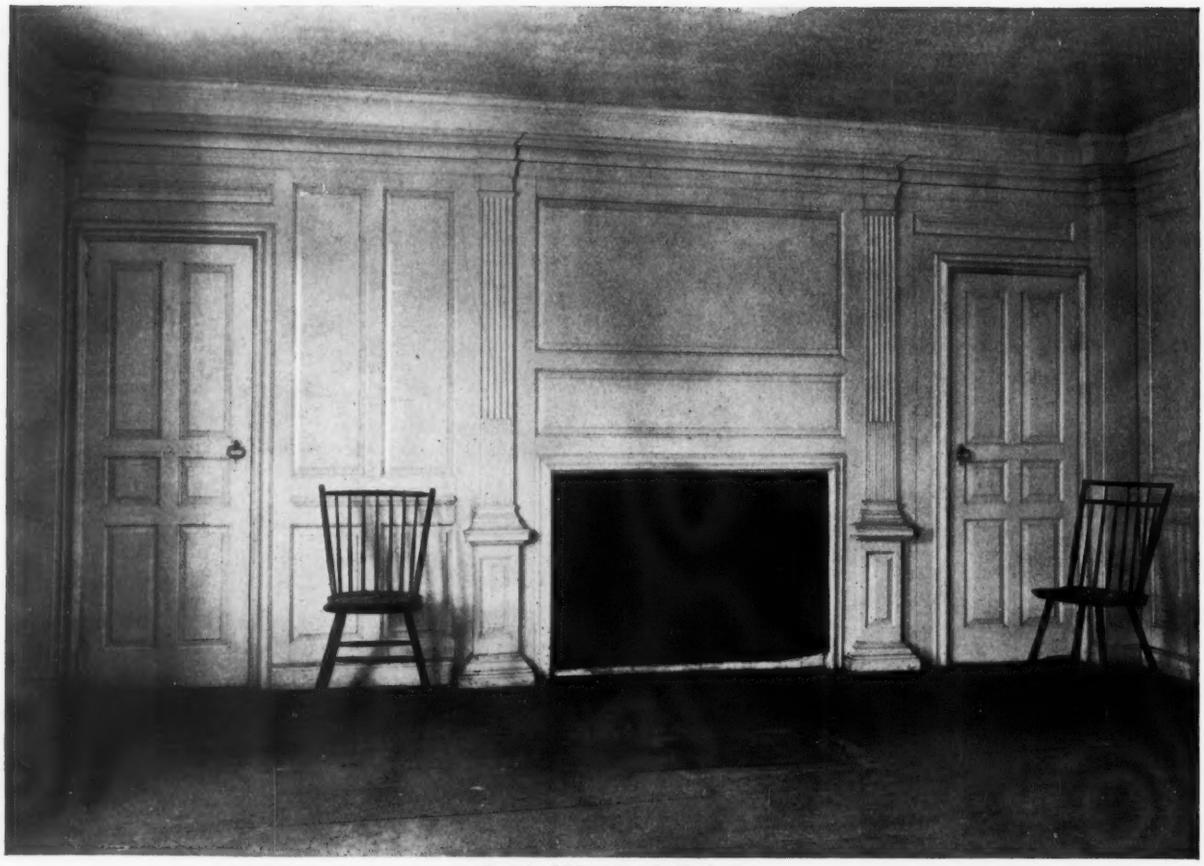
THE GILMAN GARRISON HOUSE—1655-57—EXETER, NEW HAMPSHIRE



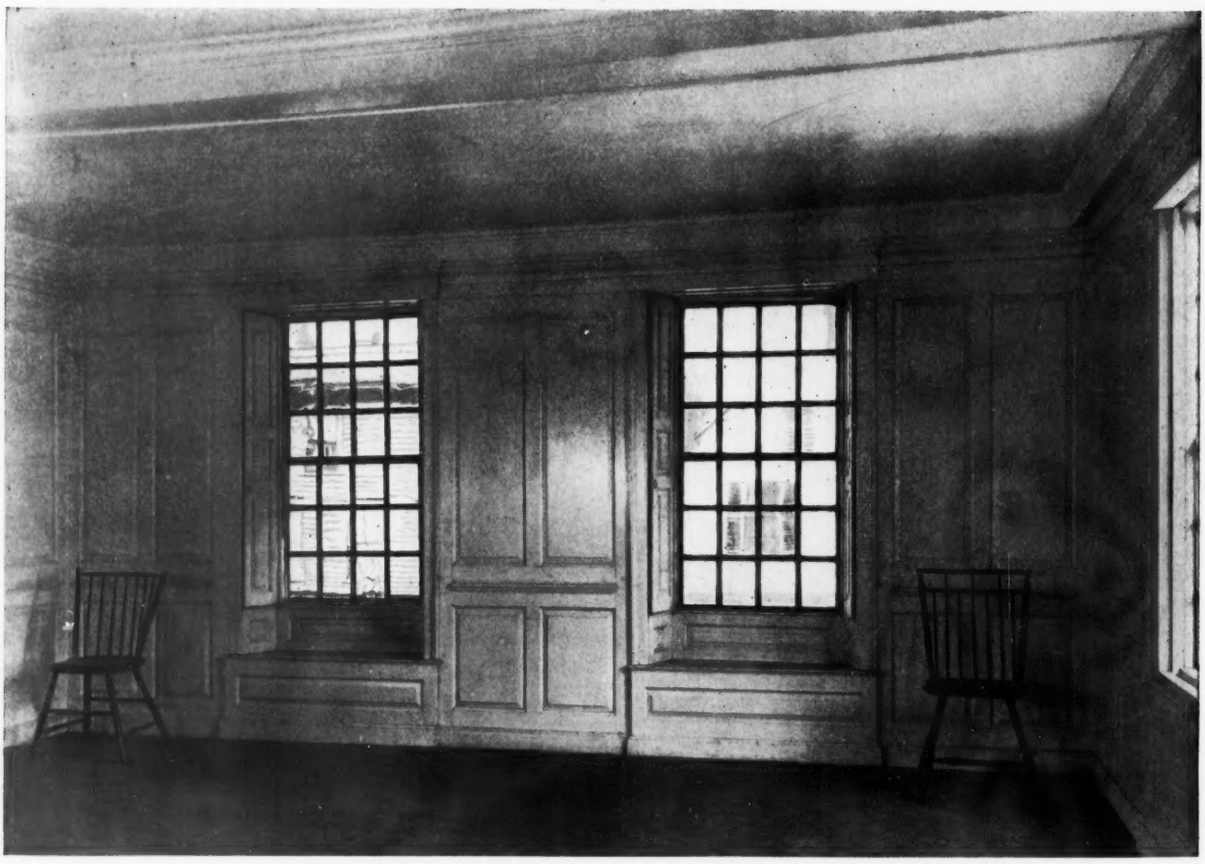
Original Log Garrison Portion at Left. The 1750 Wing Shows Projected Beyond at Right.

Rear View of Original Log Garrison Portion.

THE GILMAN GARRISON HOUSE—1655-57—EXETER, NEW HAMPSHIRE

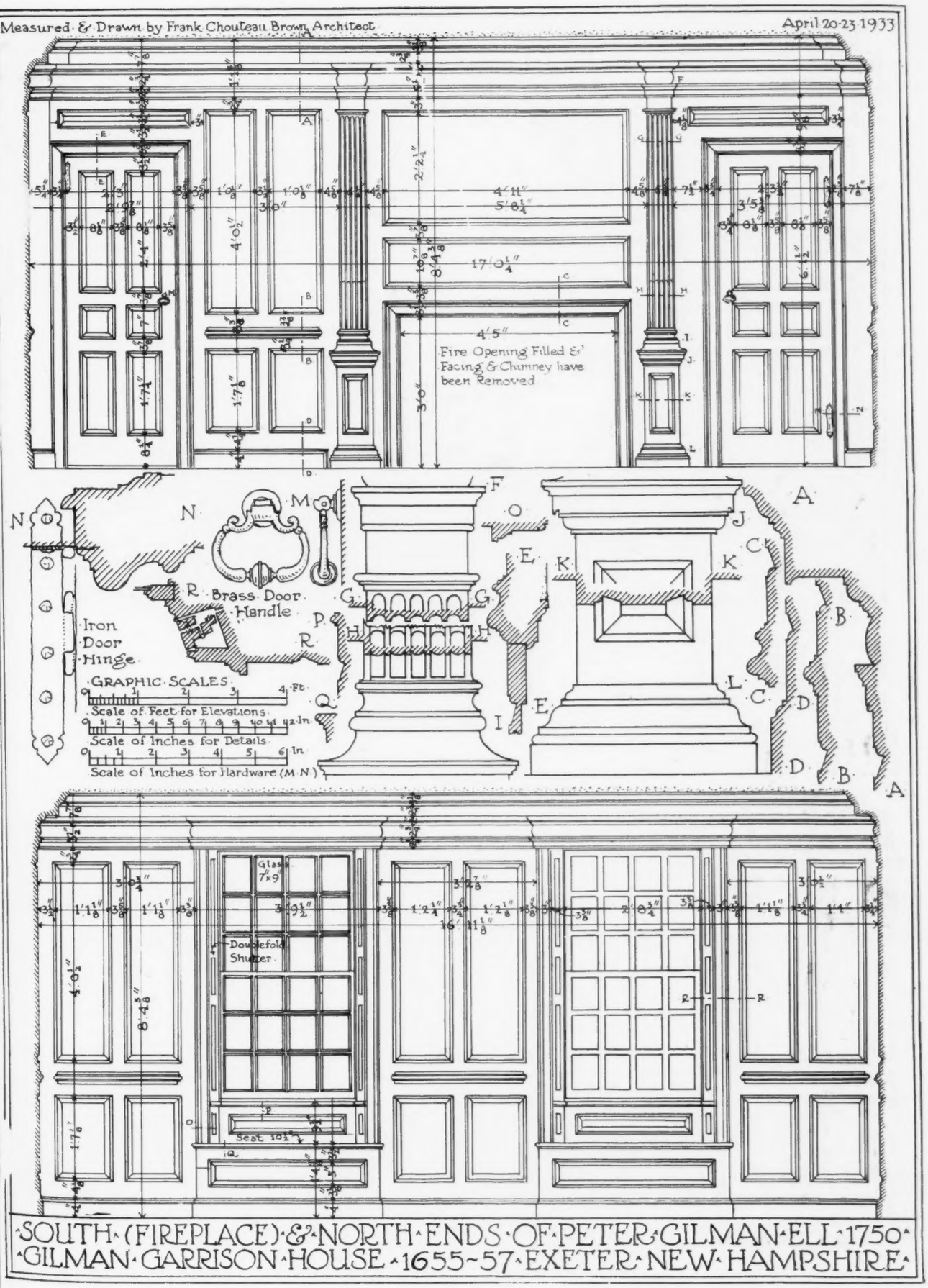


South (Fireplace) End.



PETER GILMAN ELL—1750—GILMAN GARRISON HOUSE, EXETER, NEW HAMPSHIRE

[40]


Measured & Drawn by Frank Chouteau Brown Architect
April 20-23 1933
Fire Opening Filled & Facing & Chimney have been Removed
Brass Door Handle
Iron Door Hinge
GRAPHIC SCALES
Scale of Feet for Elevations
Scale of Inches for Details
Scale of Inches for Hardware (M N)
Glass 7"x9"
Doublefold Shutter
Seat

SOUTH (FIREPLACE) & NORTH ENDS OF PETER GILMAN ELL 1750
GILMAN GARRISON HOUSE 1655-57 EXETER NEW HAMPSHIRE

The Frost Garrisons, at East Eliot, Maine (Pages 35-37), are the latest existing structures of the log type.

The large Garrison was evidently intended to accommodate animals as well as human beings, and the perfection of the smooth hewn log surfaces, their close fit at the joints, both horizontal and end joinings, as well as the tightness of the pit-sawn plank floor, "laid green and frozen," are most remarkable today.

This section was especially open to Indian raids, and many Garrisons were maintained here during the later years of the French and Indian wars. In 1695, twenty Garrisons were listed in Durham as being maintained by the authorities, and each soldier cost the Province at the rate of £3, s.12, d.0 board for eighteen weeks, according to the old records, while from one to four soldiers were quartered in each of the Garrisons.

The only other easily recognizable Garrison in southern Maine is the McIntire Garrison at Scotland (Brixham), on the Eliot side of York, which was built by Micum McIntire, and is still preserved by that family. The corners were dovetailed, with sloping surfaces to throw out the water.

Another two-story garrison nearby, the Bunker Garrison (Page 38), was measured as late as 1910. It was 40′-6″ by 20′-9″ outside, and the corner angles were notched, and the door posts had logs tenoned into them, while the top of the low doorway was cut into a slight segment of an arch in the under edge of the caplog.

THE McINTIRE GARRISON HOUSE—1640-45—SCOTLAND, NEAR YORK, MAINE

There are many old brick Garrisons in this northern section, some of which were originally built with that purpose in mind, and others adapted to it as being the "most defensible" in their locality.

Thomas Duston, who had settled in Kittery in 1654, afterwards removed to the top of a hill outside Haverhill—then Pentucket—where he experimented in making bricks, finally building the present house of them some time during 1696-97, with "floors and roof of white oak."

Haverhill, Massachusetts, occupied an important

point on what remained the northern frontier of the New England colonies for nearly seventy years. The town records of 1690 show the appointment of six Garrison houses, and four "houses of refuge."

In describing the characteristics of the houses located in that vicinity, Mirick writes: "Most of the garrisons and two of the houses of refuge—those belonging to Joseph and Nathaniel Peaslee—were built of brick, and were two stories high; those that were not built of this material had a single laying of it between the outer and the inner walls. They had but one outside door, which was often so small that but one person could enter at a time; their windows were about two feet and a half in length, eighteen inches in breadth, and were secured on the inside with iron bars. Their glass was very small, cut in the shape of a diamond, was extremely thick, and fastened in with lead instead of putty. There were generally but two rooms in the basement (first) story, and tradition says that they entered the chamber with the help of a ladder instead of stairs so that the inmates could retreat into them and take it up if the basement-story should be taken by the enemy. Their fireplaces were of such enormous sizes that they could burn their wood, sled-length, very conveniently, and the ovens opened on the outside of the building, generally at one end."

This description well applies to the Hazzen-Spiller house, a listed Garrison, built in 1724, about three-quarters of a mile below the center of the town.

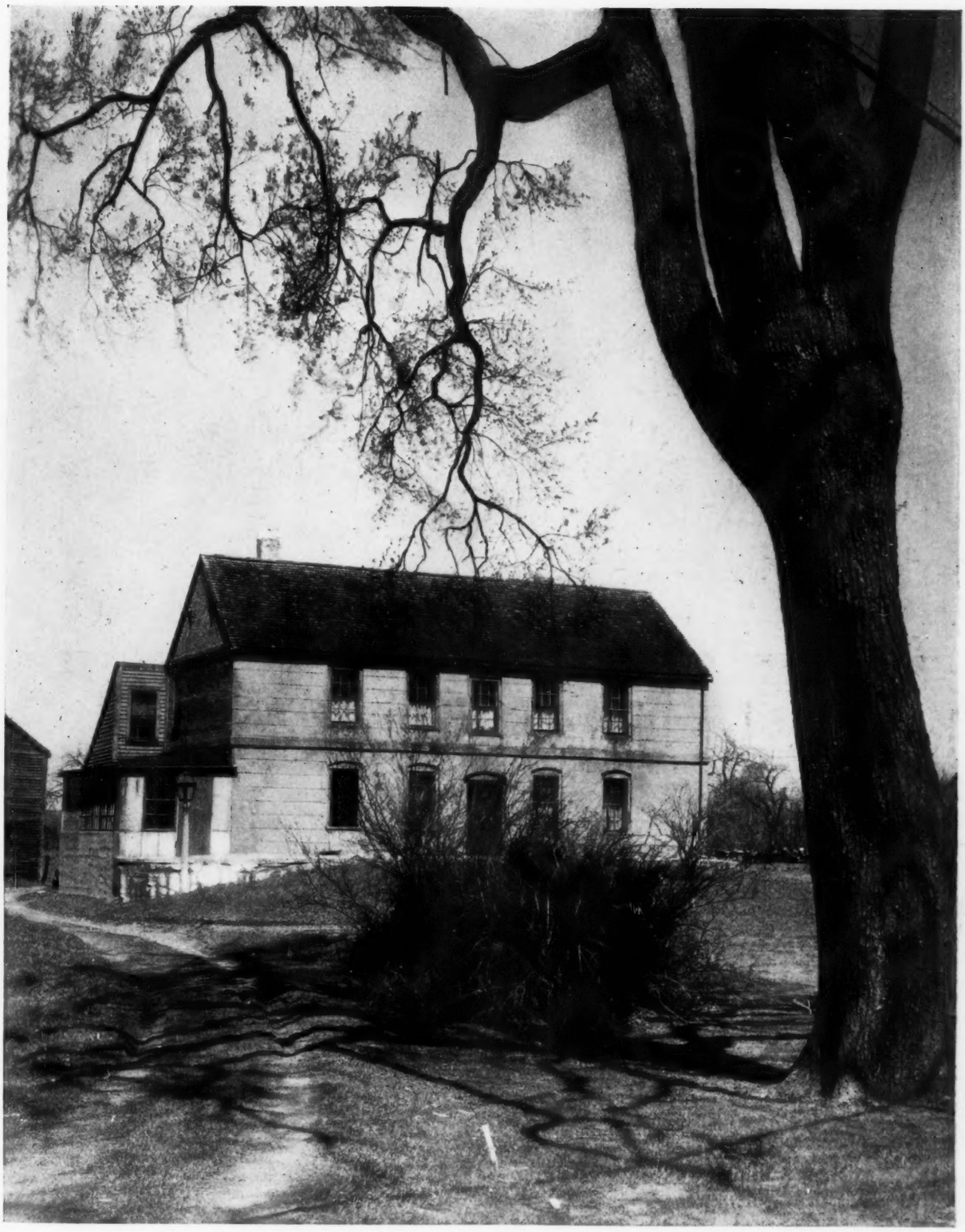
THE DICKENSON-PILLSBURY-WITHAM GARRISON HOUSE—1700—GEORGETOWN, MASS.

The Dickenson-Pillsbury-Witham House, built on a knoll beside the road in Georgetown, near the Rowley line, previous to 1700, is described in an early family record, as follows: "It was built in the time of the Indian depredations. My great-grandmother occupied it in the time of the Indians. It was lined from the sill to the girth with bricks between the plastering and the boards. There were doors outside the windows to shut at night. The outside doors were

barred inside. One night the Indians came and attacked the house, making an attempt to cut the outside (doors) down to get into the house. My great-grandmother took a pail of scalding water, went upstairs, and poured it onto their heads, and they were glad to retire." J. L. Ewell, in his *Story of Byfield, a New England Parish*, further adds: "In these houses, the second story frequently projected over the lower one for defense against the Indian, and the roof ran down to the lower story in the rear, making a back 'linter' (lean-to). In the huge chimney was the bench where the family could sit cozily and watch the great fire of logs or read by its light. Mr. Witham's house is probably an heirloom from the seventeenth century. Its architecture closely resembles that of the old house on Kent's Island, not now standing, that was said to have been built in 1653. The large living room has a huge fireplace in which two cook-stoves stand side by side, a beautifully carved wooden latch on the great cellar door, a crane five or six feet long attached to a great beam in the ceiling to swing out and hold candlesticks suspended by trammels and wooden partitions dressed of old with blue clay and skim milk in lieu of paint." This original surfacing can still be seen on portions of the woodwork in this room shown below.

Paul Pillsbury, one of its inhabitants, in the war of 1812, shouldered and carried a cannon weighing seven hundred pounds. He invented in this house the "peg machine" that revolutionized the shoe business in New England, selling pegs for eight cents a quart or $2.00 a bushel—that formerly had to be painfully split and whittled by hand out of maple by the shoe makers. The first cut nails were also made nearby, in a factory on the Parker River, where were also the first cotton and woolen mills in America, dating from 1636, and the first fulling mill, from 1643.

THE DICKENSON-PILLSBURY-WITHAM HOUSE—1700—GEORGETOWN, MASSACHUSETTS

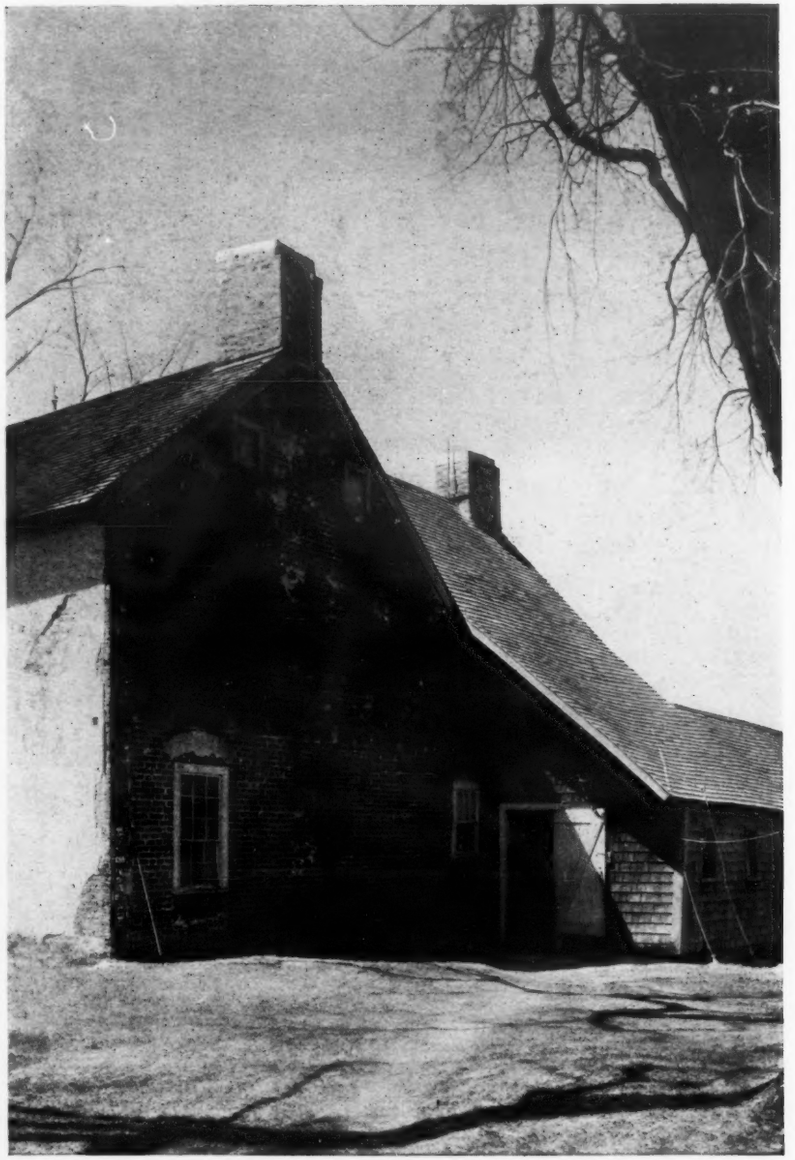


THE NATHANIEL PEASLEE GARRISON HOUSE—1675-80—WEST NEWBURY, MASSACHUSETTS

[45]

[46]

Only One of the Old Windows Remains in the Attic of the Front Gable.
DUSTON GARRISON HOUSE—1696-97—HAVERHILL, MASS.



General View Shown on Page 32, Monograph Two.
JOSEPH PEASLEE GARRISON—1675—ROCK VILLAGE, MASS.

(Building Restored in 1917)

THE HAZZEN-SPILLER GARRISON HOUSE—1724—HAVERHILL, MASSACHUSETTS

GARRISON HOUSE PORTION—WITCH HOUSE, PIGEON COVE, MASSACHUSETTS

[48]

Figures and Finance for the Architect

By Robert Lee Henry, C. P. A., L. L. B.

Editor's Note:—*This is the second of a series of discussions by Mr. Henry, who is recognized as one of the foremost authorities on the financial phase of the architect's work. He will answer on this page hereafter, in addition to writing a regular monthly article, all questions where a Certified Public Accountant can be of assistance. Mr. Henry has been closely allied with the Architectural Profession for a long period of time and at present, under the auspices of the New York Architects' Emergency Committee in connection with its program of "made work," is actively engaged in the supervision of the preparation of a Uniform System of Accounting for Architects. Inquiries of this nature are invited. Letters directed to Mr. Robert Lee Henry,* PENCIL POINTS, *330 West 42nd Street, New York City, will receive prompt reply. If a question is of general interest it will be published, unsigned, together with Mr. Henry's comments.*

Notwithstanding the usual technical difficulties confronting the Architect during the course of his artistic endeavors, the trend of the times has broadened the financial scope of the practitioner forcing him to enter the field normally occupied by the credit man.

Present-day conditions have naturally made it a requisite for the client to conserve expenditures as much as possible. In a great many instances, particularly so where the project is to be erected by the contractor for a fee based on a percentage of the cost, one of the results has been the entire elimination of the Completion Bond. Although the Architect may feel that this policy is "penny wise, pound foolish," expediency generally forces him to fall into line.

In the normal course of events, it becomes the Architect's duty to recommend a group of General Contractors who he considers are acceptable from the point of view of technical ability. However, he now has the added burden of selecting those financially able to carry out and complete the project and his recommendations must embody both qualifications. It is apparent that this added duty is not to be taken lightly; one disastrous undertaking by the contractor since the date of his last authentic credit rating might have changed the entire complexion of his financial standing. Furthermore, it is hardly fair to allow a general contractor to go to the expense of compiling a bid unless it is felt beforehand that his financial position is satisfactory.

While some small comfort is obtained from the realization that, in the final analysis, the client is to make the award, it is well known that the client is guided to a large extent by the Architect's opinion; also, that in the event of a default the work of the Architect is increased considerably. Thus, the task of weeding out the financial weaklings assumes weighty proportions; particularly, when the client expresses a desire to invite a favorite or some small unknown contractor to make a bid.

The Architect will find these new duties very much easier if he will follow a few simple rules of procedure.

The Joint Conference of Construction Practices (222 Munsey Building, Washington, D. C.) has issued a Standard Form of Contractor's Financial Statement for use in investigating the qualifications of bidders on public and private construction. With a few additional inquiries of a personal nature the data which the G. C. should be required to submit on this form will be sufficient. The statement is quite complete, in that it presents a Statement of Assets and Liabilities together with details respecting the amounts set forth on the Statement in bulk.

Intelligent study and analysis of the Financial Statement should result in a fair determination as to the financial responsibility of the prospective bidder. Naturally, the problem resolves itself into three major issues respecting status and the all-important moral issue. Eliminating, for the moment, the moral question, the three major issues may be classified as follows:

1. What is the liquidity of the assets?
2. What is the relation of the liquid assets to the liabilities?
3. Does a study of the first two points indicate that the Contractor will have sufficient cash at the "high point" of the job?

With respect to the first point, it is obvious that, in these times, only liquid assets (cash or items readily convertible into cash) can enter into the calculation. Such items as Accounts Receivable should be carefully examined and discounted. Accrued Interest, Real Estate Investments, Materials Inventory, Equipment and Furniture and Fixtures, while they may have value to a going concern, must be painstakingly discarded. From the point of view of financial responsibility, only such items as can be quickly realized upon should be considered. It is necessary to take the impersonal, cold-blooded attitude that is assumed by the banker when approached for a loan. Accounts Receivable, Stock in Trade, Goodwill, and Intangibles receive little consideration under the present-day system of valuation and all that one may borrow on such items is a great amount of sympathy. Furthermore, the days when a General Contractor could toss his signed contract on his banker's desk and demand and obtain a substantial loan have definitely passed.

Through careful study and elimination, the asset values set forth on the statement can be brought down to "rock bottom" figures. Having done so, it is wise to require that the remainder of the assets be at least three times the liabilities. A relationship of less than three dollars of assets to one dollar of liabilities is generally considered unsafe and perhaps an even greater margin of safety should be demanded. In the event

that some of the liabilities are secured by good liquid assets, it is much more conservative, in arriving at a valuation, to eliminate remaining equity in the assets on the theory that a forced sale brings less.

The third and last point with respect to the financial angle—Are the remaining liquid assets sufficient to carry the G. C. over the high point of the job?—largely depends upon the terms of the contract. Having knowledge of the agreement between the Client and the G. C., and of the percentage which the G. C. will withhold from his subcontractors, it is necessary to calculate whether the G. C. has or will receive, during the course of the work, sufficient funds to carry him over the period when his cash outlay on the job will be at its height. Normally this point occurs between the commencement of activities and the first payment, and again when the job is ready for final approval.

Of course, a great deal of care must be exercised to determine whether or not there exists the likelihood that payments to the G. C. will be used for private purposes. Enter, the moral phase of the situation. When it is considered that the professional reputation of the Architect is involved and, further, that the finished work of the Contractor is the yardstick by which the Architect's work is measured, it is not unreasonable for the Architect to thrust his inquiring rapier deep into the financial and moral mid-section of his prospective associate.

Questions and Answers

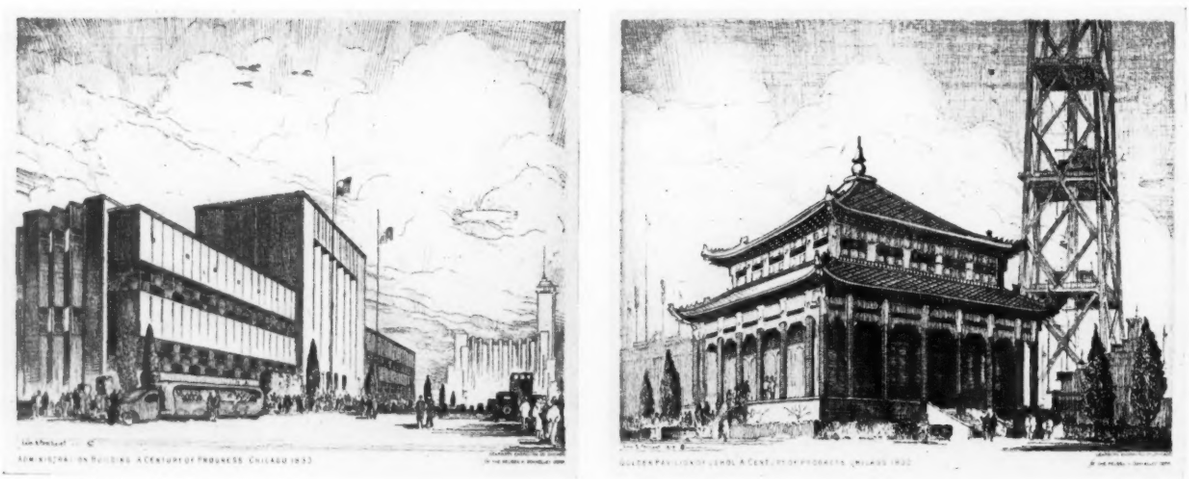
Question:—We have always been interested in the question of the proper method of applying overhead to the specific jobs. Granted that we have kept our overhead expenses down to what we now consider a minimum, what do you consider the best method of apportionment? To state our specific case briefly, we are equipped to handle a great deal more work than we have on hand and we are carrying some "old-timers" hoping for better days.

Answer:—In times like these you must be prepared to carry some of this overhead as part of your administrative expenses. You cannot expect the job cost account to absorb all of your overhead when admittedly you are carrying idle men.

This type of situation is one of the best illustrations in favor of the "time" basis of distributing overhead.

Briefly speaking, the time cards are added up and a distinction is made between productive time and non-productive time. The total number of employment hours is divided into the total overhead and an hourly overhead rate is established. This hourly overhead rate is multiplied by the number of productive hours spent on each job and the job cost account is charged with the resultant amounts. The balance of overhead unabsorbed is charged against Administration Expenses.

To carry out this system it is necessary for principals to keep time-cards as well as draftsmen and others directly connected with productive work. Wherever possible, secretaries and clerical assistants should also keep time-cards as thus will the calculation reach a finer degree of accuracy.



Courtesy Reuben H. Donnelley Corp.

TWO ETCHINGS BY LEON R. PESCHERET OF CHICAGO

FROM A SERIES OF TEN VIEWS BY THIS ARTIST OF THE CENTURY OF PROGRESS EXPOSITION

Size of originals, 5⅛" x 4"

Ripley's Recipes

By Hubert G. Ripley, F. A. I. A.

"The bubble winked at me and said,
You'll miss me, brother, when you're dead."

OLIVER HEREFORD.

It was with not a little hesitation that that distinguished philosopher, Senator of France, *gourmet, voyageur,* member of several learned societies, and kindly benefactor of the human race, Anthelme Brillat-Savarin, undertook in his declining years the composition of his famed *"Physiologie du Gout."* It is one of the most delightful books ever written, and the one on which his fame chiefly rests. The spirituality and high-minded character of this genial *bon vivant* and *raconteur* shines on every page. His love of humanity and efforts for their amelioration is in evidence throughout all his *"Méditations," "Variétés"* and *"Esquisses."* One of his aphorisms was—"The discovery of a new dish gives more enjoyment to mankind than the discovery of a new star": an even more famous one—"Tell me what you eat, and I'll tell you what you are."

Among the many lists of ten books indispensable for a lonely sojourn on a desert isle, I have never seen mentioned the *"Physiologie du Gout,"* yet what other work could so delightfully supplement the doubtless wise selections of the master minds who do our thinking for us?

The mental processes of *homo-sapiens* and his capacities for enjoyment are varied and complex to an almost infinite degree. The cultivation of man's taste is the primary duty of all good architects and the resultant æsthetic emotion produced, a lenitive to his spirit.

Example: In one of our great Institutions of Learning the custom is to give, each winter, lectures on the Fine Arts illustrated with lantern slides. A number of years ago, the holder of a traveling fellowship, recently returned from foreign study in France, Italy, and Greece, was advertised to give an illustrated lecture on architecture. This he did, punctuating his discourse with comments on each slide as it appeared on the screen facing the attentive auditors and absorbed spectators. When the slide showing the Parthenon flashed out in all its magnificent glory and grandeur, despite the ravages man had wrought and the gnawings of the relentless tooth of time, an awed hush fell over the assembly as it always does whenever that masterpiece of Ictinus and Callicrates and the matchless glories of Phidias appear.

"This, ladies and gentlemen," announced the lecturer, "is the Part'enon. It is considered by authorities as the finest building in the world. I t'ink it's pretty good!" A remark well deserving a prize for understatement.

The Greeks had a recipe for their masterpieces, just as the Egyptians had for theirs. The former was undoubtedly derived from or at least a metastasis of the latter through the introduction of such qualifying modalities as the amenities of the situation seemed to justify. Great blocks of stone were used liberally by both peoples in their buildings. These were either roughly shapen, mathematically trued or refined to the utmost limit of suavity as the taste of the masterworkmen and the æsthetic sense of the cultured classes demanded.

Savarin remarks that man is born a roaster, but becomes a cook. Likewise man is born a worker (tecton) and becomes an architect (architecton) through study and cloistered meditation in our halls of learning, and in the studios of the masters. The genius of the masterworkman shines out in the fashioned stone, just as the genius of the skilled chef is radiated from a perfect omelet, or the art of the vintner imprisons the golden sunshine of the *Côtes d'Or.*

Take one of Eph's orange blossoms for example. Eph was a masterworkman if there ever was one. Slight of figure, alert, genial, and, when need be, a martinet, he ruled the destinies of the altar of Dionysius in the Winter Place Tavern. The altar is still there, but, ehu! Eph is departed, like the sacrificial vessels and implements of his craft, the Elixirs, Tinctures, Infusions, Ingredients, and Cordials from which he so skillfully compounded and concocted for the assuagement and benefit of a grateful world.

Let's see, where were we, oh yes, the Orange Blossom! On those crass tipplers whose chief idea is quick action and plenty of it, Eph's Orange Blossoms would be wasted, almost a total loss in fact. Now, in very truth, we must admit that we have drunken many an unworthy orange blossom when Suburbia was at play. One simply cannot take raw alcohol, water, orange juice, and shake it up with a little ice and hope to go very far, that is if you have any regard for your reputation as an amphitryon. Many have gone far too far after imbibing a dozen or so. Eph used to take a large bar glass (a bar glass, my children, is a straight-sided glass holding six or eight ounces; a large bar glass holds twelve or fourteen), fill it two-thirds full of finely shaven ice from a silver scoop, add a scant half-teaspoonful of powdered sugar, the juice of somewhat less than half a small lemon, the juice of one-half a goodly orange, preferably a sun-kissed navel, one or two drops of gum tragacanth, and two fluid ounces of Booth's Old Tom, clap on the nickeled top and shake until frost formed outside the metal. Meanwhile a slender-stemmed glass, full of shaved ice to keep it cool, had been standing before you. This was now dumped out and the contents of the shaker strained into the chilled cup, Eph raising his arm in a graceful arc as he did so to make the corolla of bubbles (or Baily's beads as they are sometimes called) that should be the crowning motif of the Perfect Orange Blossom. This is a simple beverage for the beginner's class, and in addi-

tion to its highly palatable qualities it contains a large percentage of valuable vitamins.

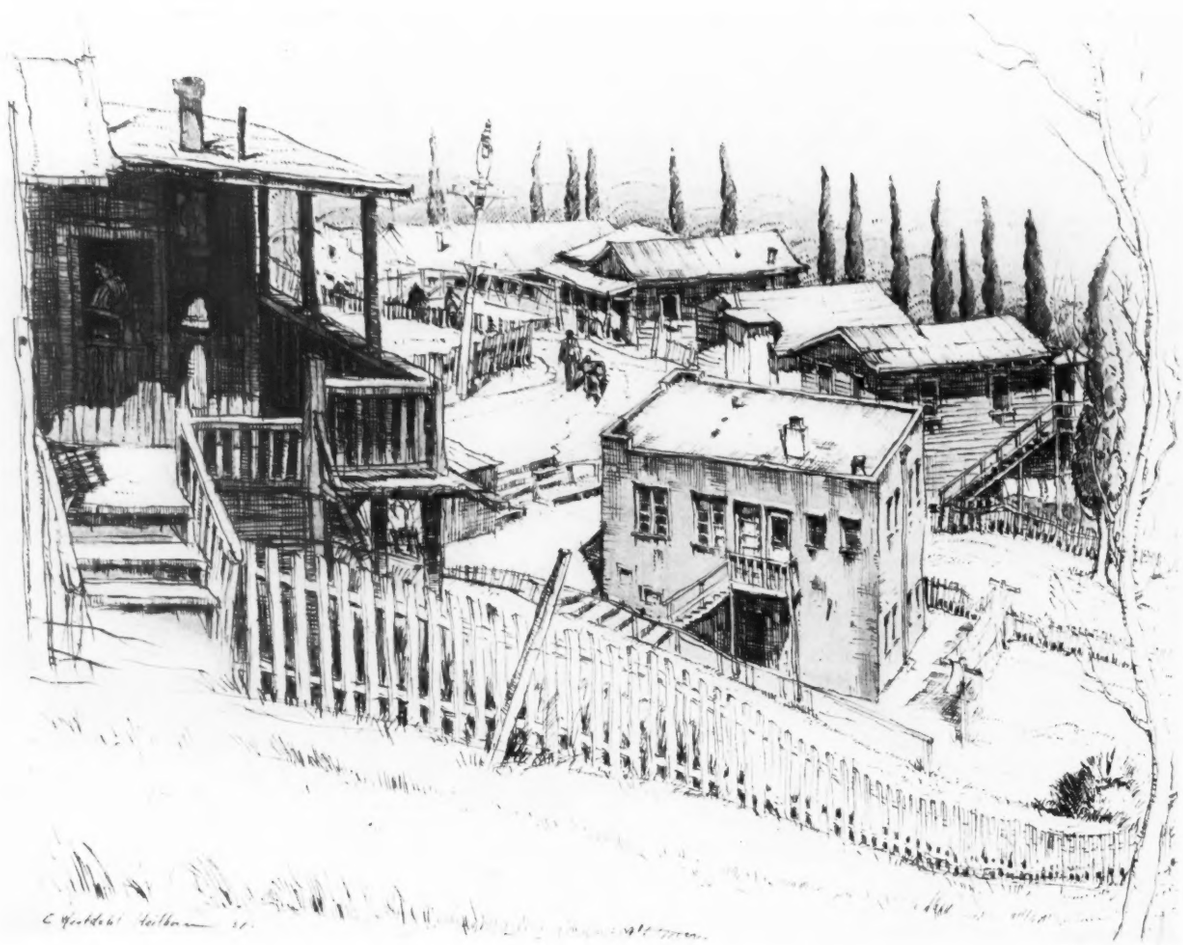
The chief qualification of a cook, Savarin says, is exactitude, and if this recipe is faithfully followed and discretion exercised in the consumption, not only will the whole system be invigorated and refreshed, but little peewees and nut-breasted hatches will be singing pæans to your soul. Don't make the mistake of drinking more than one of these (well, maybe two, or in extreme cases, two and a dividend—or three at the very utmost), for, just as after two or three glasses of the finest wine in the world, the palate becomes dulled to the finer appreciations, so the capacity for enjoyment is lessened by unmeet repetition of the Orange Blossom.

A single Doric Column, for example, when fashioned by the hand of the masterworkman, is an object for admiration. A flock of them are even finer when skillfully composed in rhythmic cadence, but a flock of Orange Blossoms soon becomes a surfeit. The analogy does not hold here even though the same artifice that quarried the rough block from the mountainside, or extracted it out of the bowels of the earth and made of it a work of art, applied in a different métier, produced the Orange Blossom from the distillations of Nature's storehouse above those quarries, and in the dells and bosquets of the smiling hills. One art is dynamic, the other static, though the emotions produced by both may be subjective.

NOTE: When the above passage was written, there was a thought there (though evidently somewhat difficult of expression) that seemed clear at the time. On reading over the proof, I'm at a loss to remember just what the meaning was. However, as there is a bare possibility that the words may carry a message of solace for some tortured soul, it may as well stand. Readers who have not fortified themselves with at least three Orange Blossoms are advised to skip it.—*Author.*

But to return for the moment to the kindly savant Anthelme, and the cult of that sweet smiling tenth Muse, the goddess Gasterea, a verse from the *Élégie Historique* with which the distinguished author closes his contribution to the Fine Art of living may be in order here.

Aspasia, Chloe, forms divine
Th' immortal chisle of th' Greeks hath wrought,
Despair of beauties of our time,
Those luscious lips did never close
On meringue vanilla, nor e'en of rose:
Nor passed your epiglottis naught
Save humble gingerbread and wine.
Gee! how I pity you your lot!



"MEXICAN HOMES, LOS ANGELES"—FOUNTAIN PEN AND WASH DRAWING BY C. WESTDAHL HEILBORN

Comparative Details—Group 9
Residence Bars

Prepared for Pencil Points by Courtesy of the New York Architects' Emergency Unemployment Committee

Drawings by Roger Garland from Data Supplied by the Architects

THE ARCHITECTS
whose details are shown on this and the succeeding pages are as follows:

EVANS, MOORE & WOODBRIDGE
HOWARD & FRENAYE
HYDE & SHEPHERD
TREANOR & FATIO
J. D. TULLIS

DETAILS PREVIOUSLY PUBLISHED

Dormers October, 1932
Fences and Gates November, 1932
Radiator Enclosures December, 1932
Second Story Overhangs January, 1933
Fireplaces February, 1933
Door Hoods March, 1933
Chimneys April, 1933
Interior Woodwork May, 1933

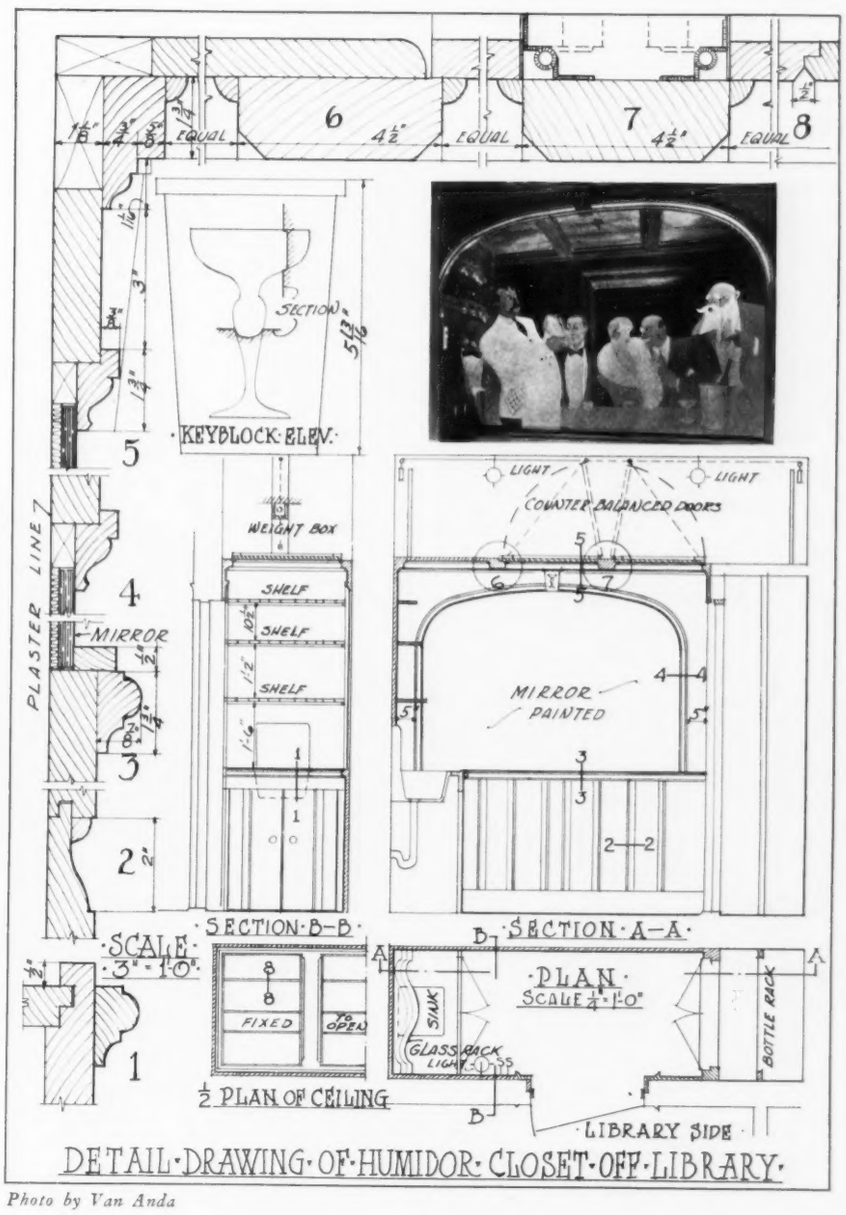
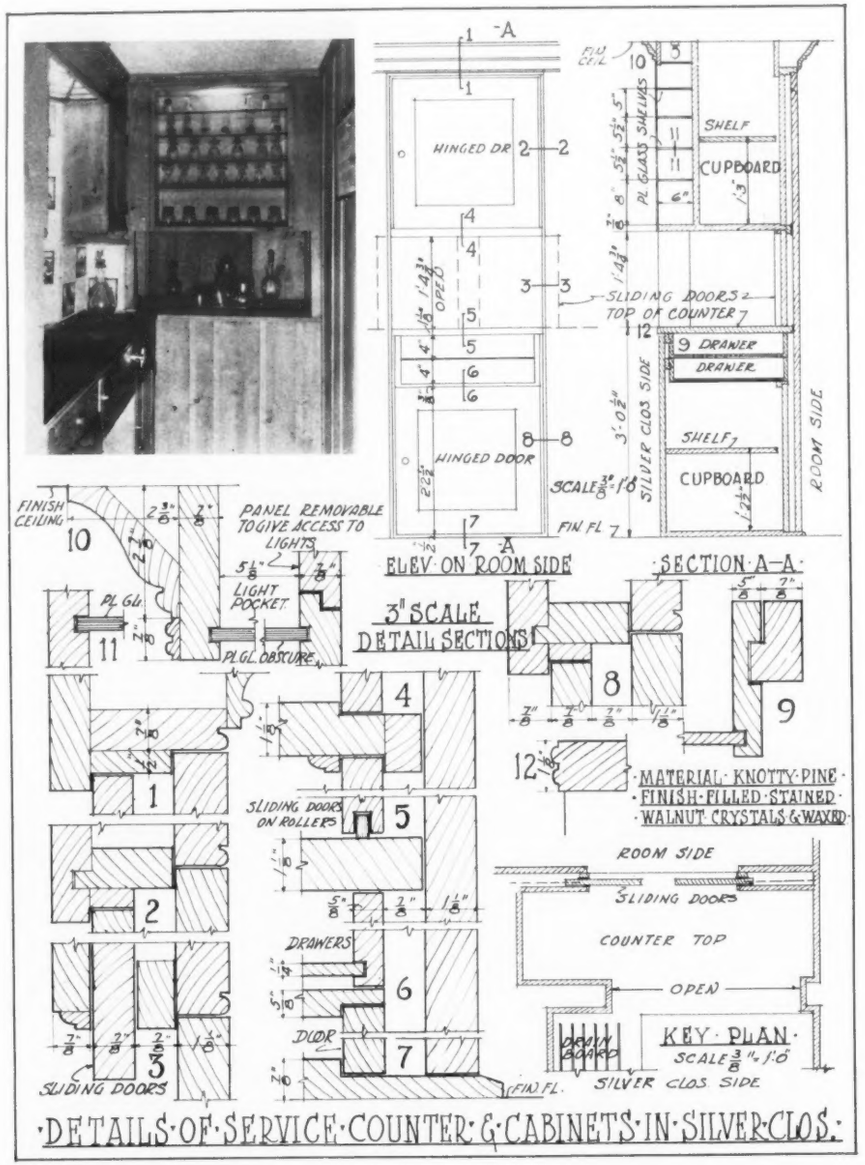


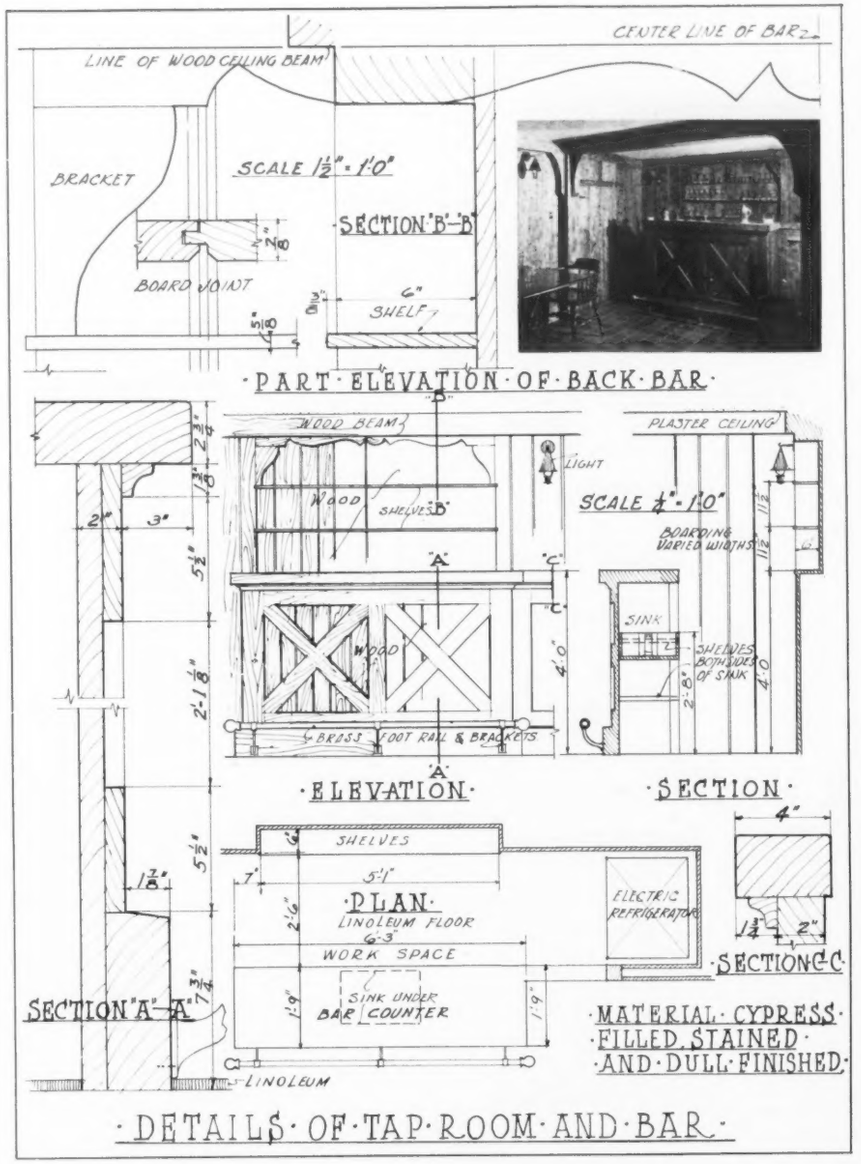
Photo by Van Anda

APARTMENT ON PARK AVENUE, NEW YORK
Treanor and Fatio, Architects



ALTERATION TO A RESIDENCE AT GREENWICH, CONNECTICUT

Evans, Moore, and Woodbridge, Architects



A RESIDENCE AT FOX MEADOWS, SCARSDALE, NEW YORK

Howard and Frenaye, Architects

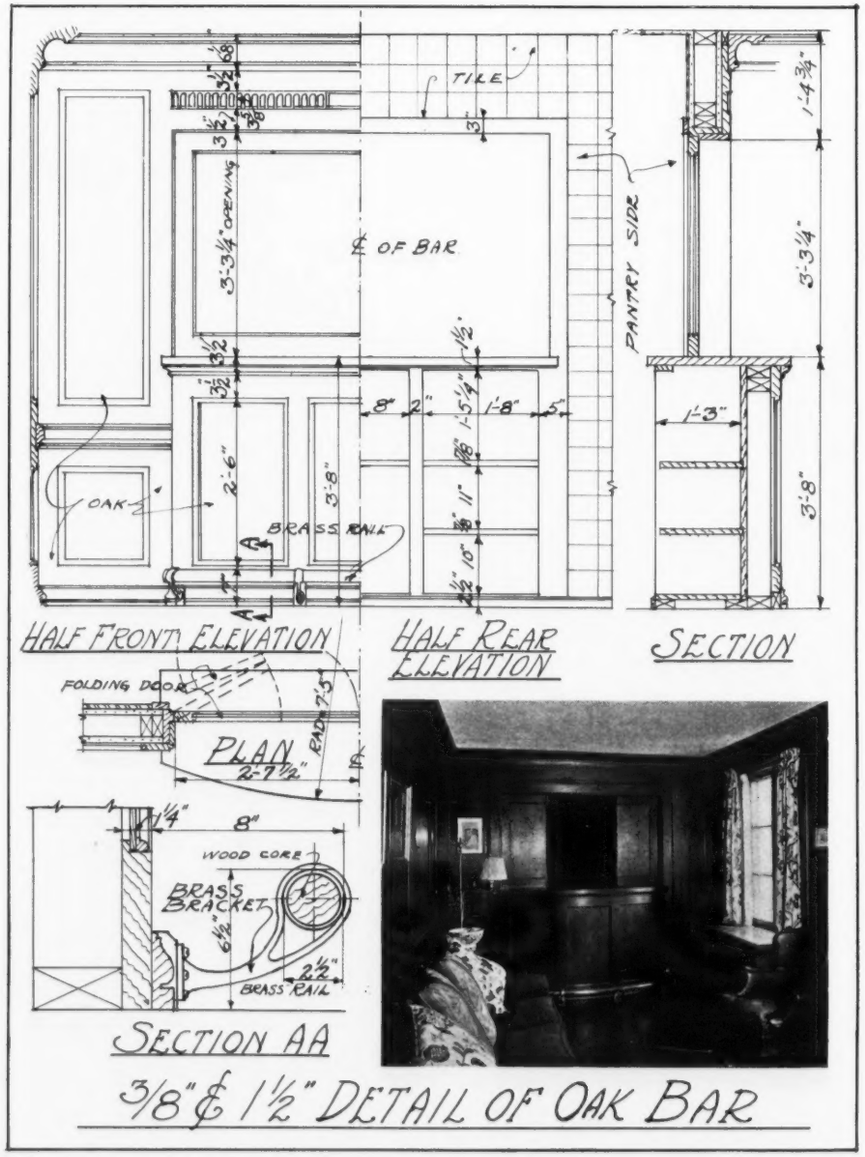
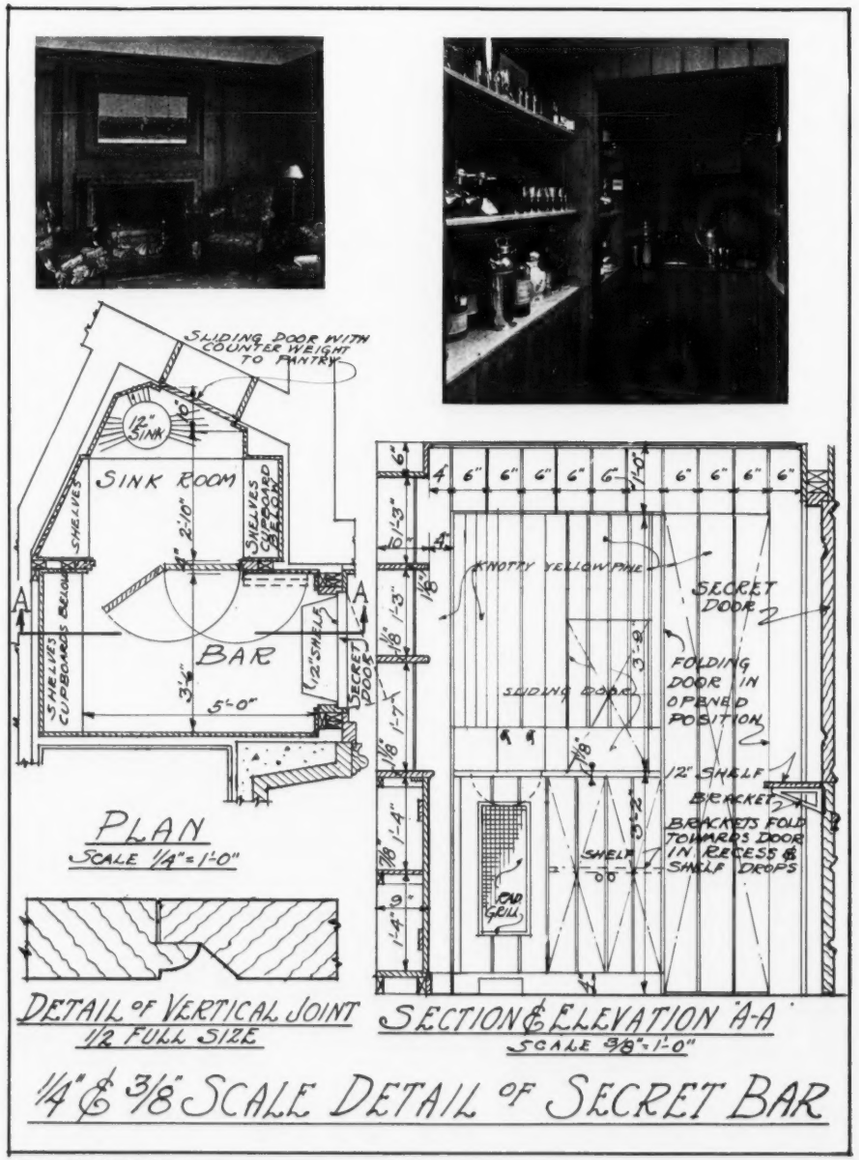


Photo by Drix Duryea

A RESIDENCE IN FAR HILLS, NEW JERSEY

Hyde and Shepherd, Architects



Photos by Drix Duryea

A RESIDENCE IN SEABRIGHT, NEW JERSEY

Hyde and Shepherd, Architects

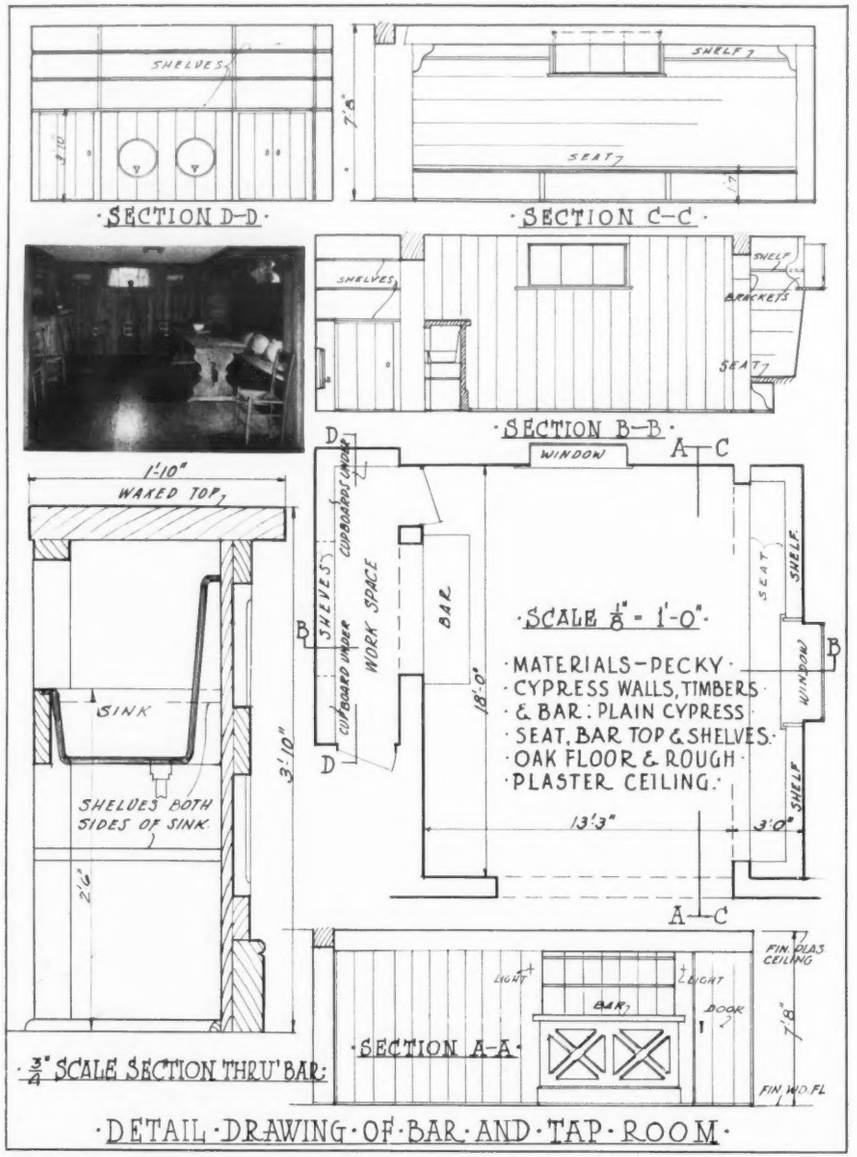


Photo by Van Anda

RESIDENCE IN MANHASSET, LONG ISLAND, NEW YORK

J. D. Tullis, Designer

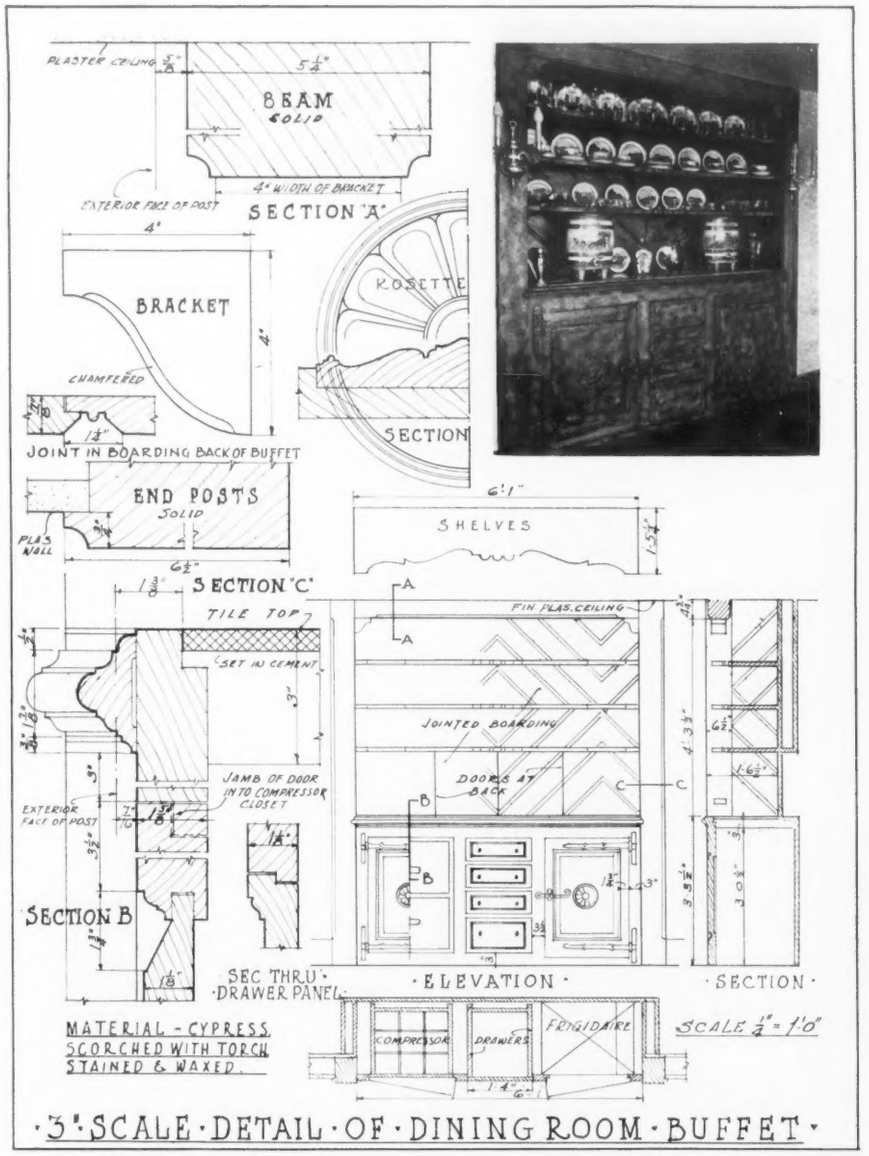
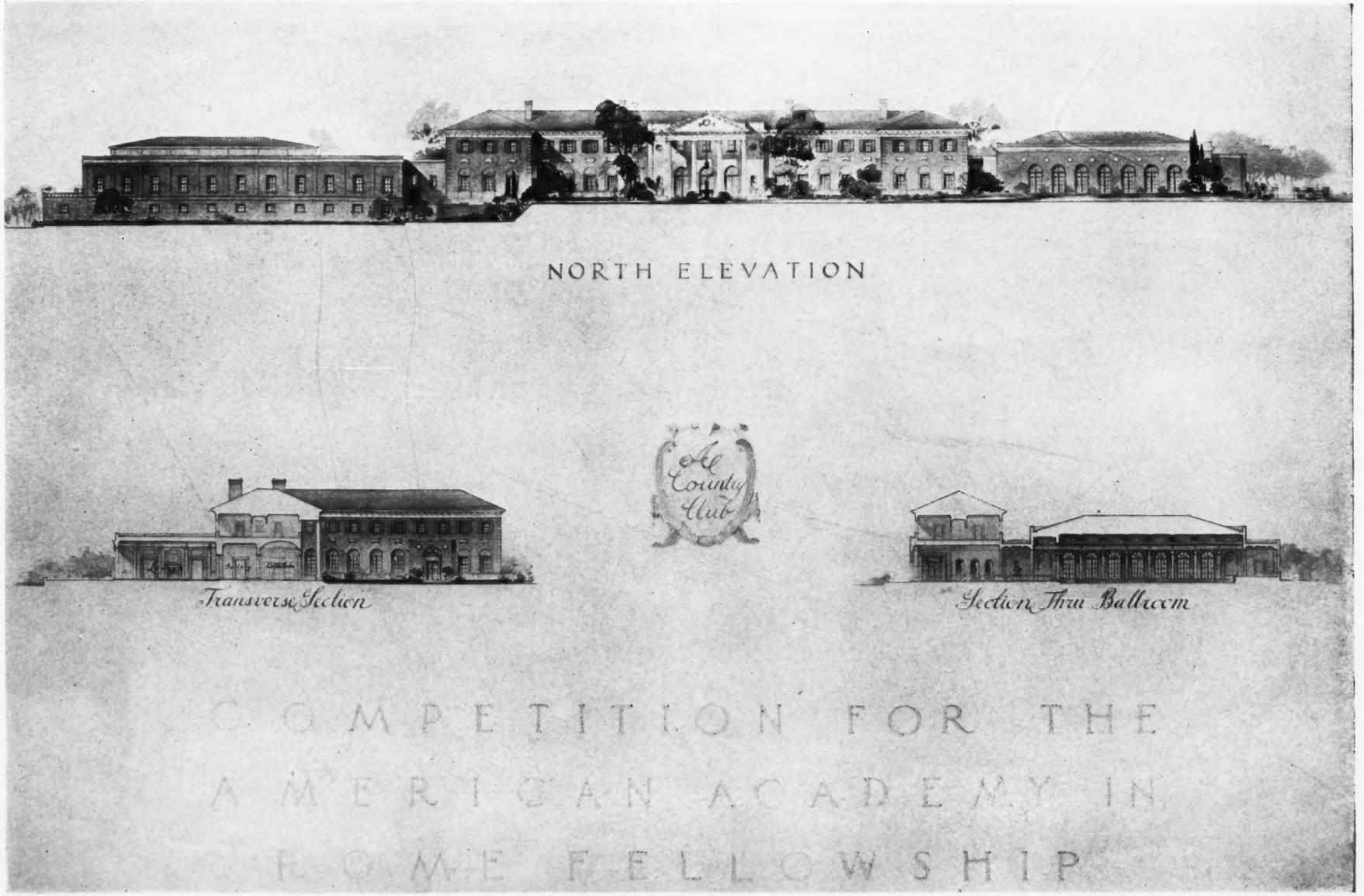


Photo by Gottscho

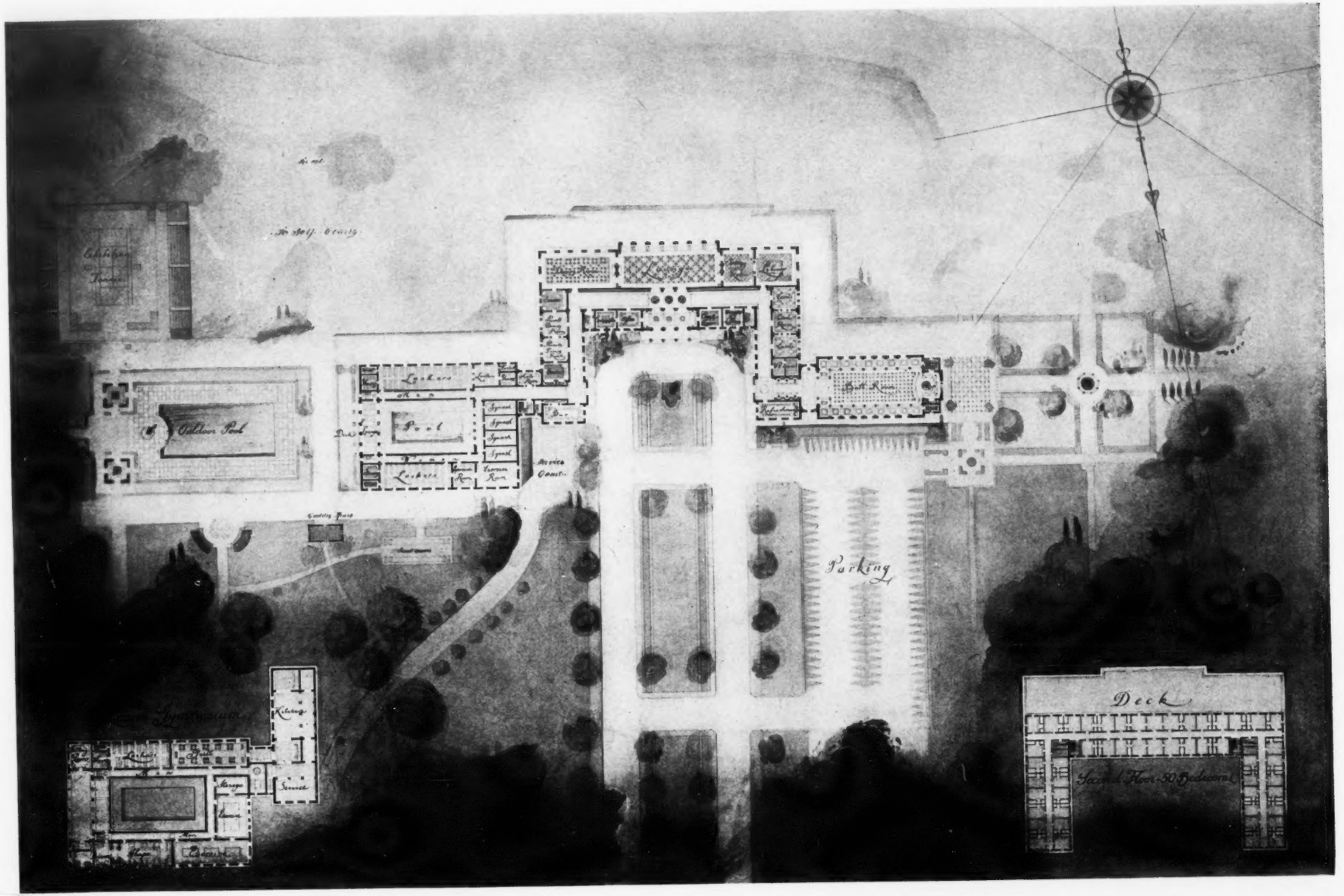
RESIDENCE FOR DEAN BEDFORD, ESQ., HARTFORD COUNTY, MARYLAND

Howard and Frenaye, Architects



ELEVATION AND SECTIONS—PRIZE WINNING DESIGN FOR "A COUNTRY CLUBHOUSE," BY OLINDO GROSSI

COMPETITION FOR THE ROME PRIZE IN ARCHITECTURE, 1933



PLANS OF PRIZE WINNING DESIGN FOR "A COUNTRY CLUBHOUSE," BY OLINDO GROSSI

COMPETITION FOR THE ROME PRIZE IN ARCHITECTURE, 1933

HERE AND THERE AND THIS AND THAT

CONDUCTED BY E.L.C.

ROME PRIZES AWARDED

OLINDO GROSSI

The Rome Prize in Architecture, this year the Daniel H. Burnham Fellowship, has been awarded to Olindo Grossi of New York. The award in Landscape Architecture went to Morris E. Trotter, Jr., of Charlotte, North Carolina, who holds the degree of Bachelor of Landscape Architecture from Cornell University.

Each winner will receive $1450 a year for a term of two years beginning October 1st, 1933, with free residence and studio at the American Academy in Rome. The estimated value of each fellowship is about $5000.

In the three-day preliminary competition in architecture there were one hundred and twenty-four entrants representing many of the leading schools of architecture throughout the country. The preliminary program called for a design for *A Military Center for a Seaport*, and for the final four weeks' competition the subject was *A Clubhouse*. The program stated that:

"A country club on the outskirts of a large city in the northern part of the United States, finding its present accommodations inadequate, proposes to erect a new clubhouse, and to develop its immediate surroundings. The club has an active membership of approximately one thousand men and women. There are existing, on the large tract of land owned by the club, a golf course and numerous tennis courts. It is proposed that the new clubhouse provide facilities for indoor athletics so that the club may be used all year round, and in addition facilities for various social activities. The building committee of the club is desirous of having a dignified building, formal in plan and design, which will serve the community for a number of years.

"The approach to the new clubhouse will be from the north; to the south is a view over the countryside. The competitor is at liberty to suggest any conformation of the land in harmony with his solution.

"Requirements for the Clubhouse fall into two groups. 1. Lounge—4,000 sq. ft.; ballroom—6,000 sq. ft.; main dining room—2,500 sq. ft.; grill room—1,500 sq. ft.; two private dining rooms—1,200 sq. ft., total; fifty bedrooms. In addition there must be provided: a library, a strangers' reception room, an office, a committee room, three card rooms, a bar and adequate kitchens, pantries, coat rooms, toilets, and bathrooms. The ballroom should be designed with a stage at one end, and two dressing rooms should be provided.

"2. Locker room for 750 men; locker room for 250 women. A swimming pool, accessible to both sexes—2,500 sq. ft.; four squash courts (standard size), accessible to both sexes; four general exercise rooms, two for each sex; two professional's rooms; in addition there should be provided adequate shower rooms, bathrooms, and toilets.

"The surroundings of the Clubhouse should be developed to include: an exhibition tennis court; parking space for two hundred and fifty cars; an outdoor swimming pool.

"Additional development of the surroundings is left to the discretion of the competitor.

"The existing golf course and tennis courts may be assumed to be adjacent and need not be shown."

The winning drawings are shown on the preceding pages.

The competitions for the Rome Prizes are open only to unmarried men, citizens of the United States, who are not over thirty years of age.

The members of the Jury of Award for the Prize in Architecture were Charles A. Platt, chairman; Chester H. Aldrich, Louis Ayres, and John Russell Pope.

Olindo Grossi, winner of the Rome Prize in Architecture, was born in New York City on July 17, 1909. After graduating from high school, he entered Columbia College where, by taking a Combined Course, he received the degree of Bachelor of Arts in 1930 and a Bachelor of Architecture from Columbia University in 1932. Mr. Grossi expects to receive the Master of Science degree in Architecture from Columbia this month.

In the summer of 1931, he was awarded a Carnegie Scholarship to study at the University of Paris. Last year he was awarded the Alumni Medal for proficiency in Design throughout the course in Architecture, and was granted a Scholarship to continue his graduate studies.

Mr. Grossi's office experience was gained with Dwight James Baum, Architect, Riverdale, New York. This is the first time that he has competed for the Rome Prize.

Mr. Grossi wishes to express his appreciation for the kind assistance and guidance of Dean William A. Boring, of the School of Architecture of Columbia University, and to acknowledge, with thanks, the training he received under Professor L. C. Dillenback, and Mr. R. M. Krob, critics in design.

He plans to sail in September, to begin studies at the Academy in Rome on October 1, 1933.

AN ARCHITECTURAL PLATE FILING SYSTEM

W. H. Tusler, A.I.A., of Magney and Tusler, Architects and Engineers, 104 South Ninth Street, Minneapolis, Minnesota, has been appointed Chairman of a committee of the American Institute of Architects to formulate an architectural plate filing system. Architects or draftsmen who have systems that they believe to be satisfactory will confer a favor on the committee by sending them to Mr. Tusler. Any suggestions will also be welcome.

It is important that members of the profession should assist the committee in its work since the results of its labors will be a standard system available to all.

DRAFTSMAN'S DATA SHEETS
SINES 45° TO 90°
COSINES 0° TO 45°
Prepared by Don Graf, B.S., M.Arch.

Sheet No. C1e
PENCIL POINTS
June, 1933

COSINE	SINE	60′	50′	40′	30′	20′	10′	0′
		0′	10′	20′	30′	40′	50′	60′
44°	45°	.70711	.70916	.71121	.71325	.71529	.71732	.71934
43	46	.71934	.72136	.72337	.72537	.72737	.72937	.73135
42	47	.73135	.73333	.73531	.73728	.73924	.74120	.74314
41	48	.74314	.74509	.74703	.74896	.75088	.75280	.75471
40	49	.75471	.75661	.75851	.76041	.76229	.76417	.76604
39	50	.76604	.76791	.76977	.77162	.77347	.77531	.77715
38	51	.77715	.77897	.78079	.78261	.78442	.78622	.78801
37	52	.78801	.78980	.79158	.79335	.79512	.79688	.79864
36	53	.79864	.80038	.80212	.80386	.80558	.80730	.80902
35	54	.80902	.81072	.81242	.81412	.81580	.81748	.81915
34	55	.81915	.82082	.82248	.82413	.82577	.82741	.82904
33	56	.82904	.83066	.83228	.83389	.83549	.83708	.83867
32	57	.83867	.84025	.84182	.84339	.84495	.84650	.84805
31	58	.84805	.84959	.85112	.85264	.85416	.85567	.85717
30	59	.85717	.85866	.86015	.86163	.86310	.86457	.86603
29	60	.86603	.86748	.86892	.87036	.87178	.87321	.87462
28	61	.87462	.87603	.87743	.87882	.88020	.88158	.88295
27	62	.88295	.88431	.88566	.88701	.88835	.88968	.89101
26	63	.89101	.89232	.89363	.89493	.89623	.89752	.89879
25	64	.89879	.90007	.90133	.90259	.90383	.90507	.90631
24	65	.90631	.90753	.90875	.90996	.91116	.91236	.91355
23	66	.91355	.91472	.91590	.91706	.91822	.91936	.92050
22	67	.92050	.92164	.92276	.92388	.92499	.92609	.92718
21	68	.92718	.92827	.92935	.93042	.93148	.93253	.93358
20	69	.93358	.93462	.93565	.93667	.93769	.93869	.93969
19	70	.93969	.94068	.94167	.94264	.94361	.94457	.94552
18	71	.94552	.94646	.94740	.94832	.94924	.95015	.95106
17	72	.95106	.95195	.95284	.95372	.95459	.95545	.95630
16	73	.95630	.95715	.95799	.95882	.95964	.96046	.96126
15	74	.96126	.96206	.96285	.96363	.96440	.96517	.96593
14	75	.96593	.96667	.96742	.96815	.96887	.96959	.97030
13	76	.97030	.97100	.97169	.97237	.97304	.97371	.97437
12	77	.97437	.97502	.97566	.97630	.97692	.97754	.97815
11	78	.97815	.97875	.97934	.97992	.98050	.98107	.98163
10	79	.98163	.98218	.98272	.98325	.98378	.98430	.98481
9	80	.98481	.98531	.98580	.98629	.98676	.98723	.98769
8	81	.98769	.98814	.98858	.98902	.98944	.98986	.99027
7	82	.99027	.99067	.99106	.99144	.99182	.99219	.99255
6	83	.99255	.99290	.99324	.99357	.99390	.99421	.99452
5	84	.99452	.99482	.99511	.99540	.99567	.99594	.99619
4	85	.99619	.99644	.99668	.99692	.99714	.99736	.99756
3	86	.99756	.99776	.99795	.99813	.99831	.99847	.99863
2	87	.99863	.99878	.99892	.99905	.99917	.99929	.99939
1	88	.99939	.99949	.99958	.99966	.99973	.99979	.99985
0	89	.99985	.99989	.99993	.99996	.99998	1.0000	

DATA SHEET NO. C1e. *The fourth of six sheets giving the Trigonometric Functions in handy form. Secants and Cosecants next month.*

THE DRAFTSMAN'S NOTEBOOK

Each month four of these *Data Sheets* will appear in PENCIL POINTS. This growing collection of practical information, added to each month, will constitute a loose-leaf reference of handy size for use at the drawing board, which will always be up-to-date. Readers are urged to comment. Orchids or scallions should be directed to Don Graf, PENCIL POINTS, 330 W. 42nd St., New York.

Thanks, Mr. Walther and Mr. Nelson, for your suggestions. N. S. King makes some observations that should be helpful to other *Daita-sheeters*—"I have discarded an old flexible-cover book for a new canvas one having large rings. This gives me plenty of room for my own notes and provides for lots of expansion as the Data Sheets accumulate. A set of indices made of detail paper adds to the ease of finding wanted information quickly. They were typed and the tabs covered with 'Scotch Cellulose Tape.' The tabs follow your classification 'Materials, Structural,' etc., as given in the Contents (sheet ii, Jan. 1933). And I have quit letting the Data Sheets pile up on me—now I cut them out each month. This only takes about ten minutes and my notebook is never missing any of the dope that has been printed."

CRANBROOK ACADEMY OF ART

The Cranbrook Academy of Art will begin the third year of its Post Graduate Architectural Department, under the direction of Eliel Saarinen, in the fall of 1933. There is no regular scholastic year at the Academy; the architectural department is for strictly post graduate or advanced school work and is limited to thirty-five students, selected by a competition.

The terms of the competition are as follows:

1. Those who wish to enter into the competition for these scholarships must register and signify their intention of so doing on or before July 15th, 1933. They must submit a complete personal history giving information as to both educational and business experience, and must submit the names and addresses of five references. A small photograph of the applicant is required. Application blanks may be obtained from the office of the Secretary.

2. Each competitor shall submit as his entry for these scholarships any architectural project which is the applicant's own solution of a real and actual problem. Evidence must be submitted to show the reality of the problem, which must be based upon actual conditions, places, environment and people. The thesis problem of the competitor done during the Senior year at an accredited Architectural School may be submitted, if the thesis meets the requirements as outlined above.

3. The material which the competitor submits may consist of drawings or models, or both, with photographs and a written explanation describing the solution of the problem.

4. The decision of the jury of award will be based upon

   a. excellence of the solution from an organic, rather than a stylistic point of view.
   b. personal record of the applicant.

5. All entries must be sent to Cranbrook not later than August 18th, 1933, with all transportation expenses prepaid by the applicant.

6. The competitors will be notified of the decision of the jury of award on or before September 1, 1933.

7. The entry material of the unsuccessful competitors will be returned as soon as possible to the competitors at their own expense.

Address all letters of inquiry for further information to Richard P. Raseman, Secretary, Cranbrook Academy of Art, Bloomfield Hills, Michigan.

STEEDMAN FELLOWSHIP WINNERS

ROLAND W. BOCKHORST

The Governing Committee of the James Harrison Steedman Fellowship, consisting of Louis LaBeaume, Prof. Gabriel Ferrand, Head of the School of Architecture, Washington University, and J. Lawrence Mauran, chairman, have announced that Roland W. Bockhorst, graduate architectural student at Washington University and assistant in Applied Mathematics, is the winner of the 1933 Fellowship. Mr. Bockhorst graduated with Final Honors in 1929 and was the recipient of the Alumni Prize and the Medal of the American Institute of Architects. He was employed by the St. Louis firm of Maritz & Young, and later worked in the office of Coolidge, Shepley, Bulfinch and Abbott, of Boston.

The subject of this year's competition for the Steedman Fellowship was the design of a *Commemorative Group on the Seashore*, which consisted of an imposing monument, two chapels, and a life-saving station, to serve as a memorial of a great sea catastrophe. The final drawings were judged in Washington, D. C., by the following jury: Prof. F. V. Murphy, head of the architectural department of the Catholic University of America, chairman; Prof. E. S. Campbell, head of the architectural department of the University of Virginia, and Edward W. Donn, Jr., F.A.I.A., of Washington, D. C.

Lester C. Haeckel, winner of last year's Fellowship, sailed for Europe on May 5th, to take advantage of the year of travel and study which is provided by this award. His starting point was Paris, from whence he traveled by bicycle through many of the architecturally important small towns in that vicinity. He will spend the month of June in England, visiting the great cathedral towns, and during the summer he expects to be in Norway and Sweden, visiting Stockholm, Oslo, and other cities noted for their modern architectural developments. Germany, Italy, Holland and Spain will also be visited, and on November 1st he plans a Mediterranean cruise, with stops in Egypt and Turkey. In compliance with the terms of the Fellowship, he will be expected to submit upon his return an illustrated thesis regarding his travels abroad, as well as original sketches or water colors, several of which will be retained by Washington University for exhibition purposes.

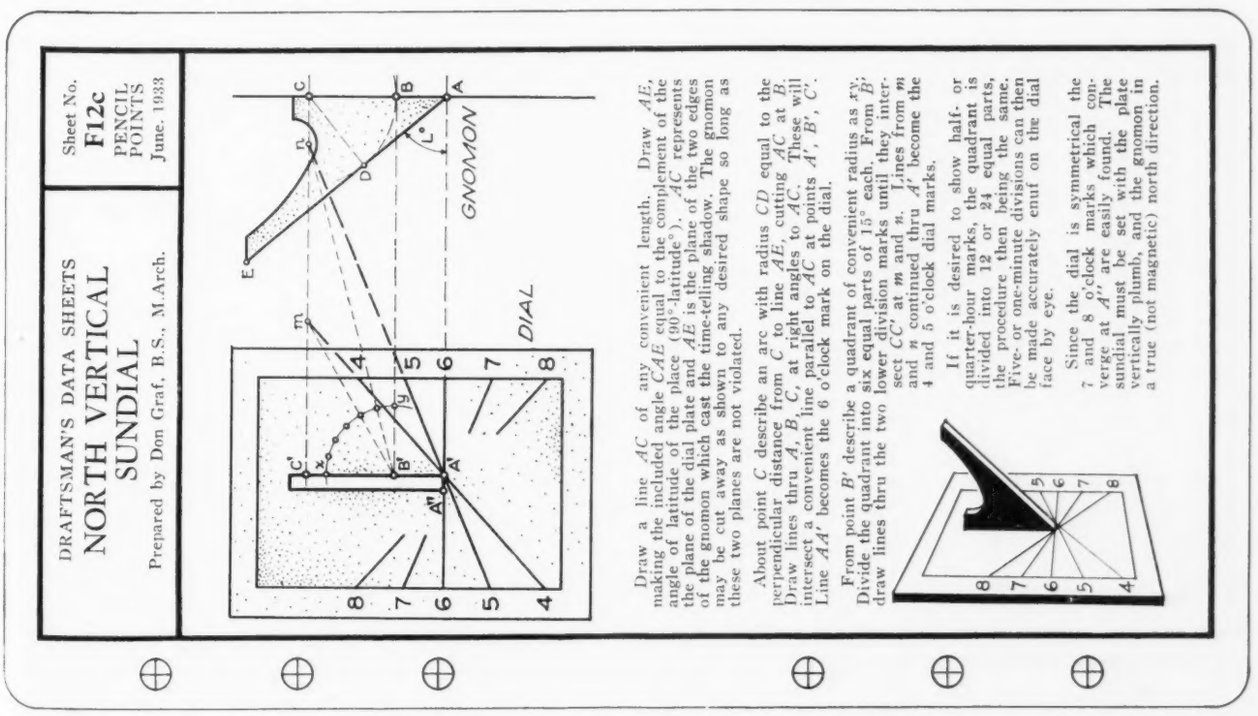
LESTER HAECKEL

This $1,500 annual award was established in 1925 by George F. Steedman and Mrs. Alexander Weddell, brother and widow of James Harrison Steedman, a graduate of the Engineering School of Washington University. It is bestowed after a competition in architectural design.

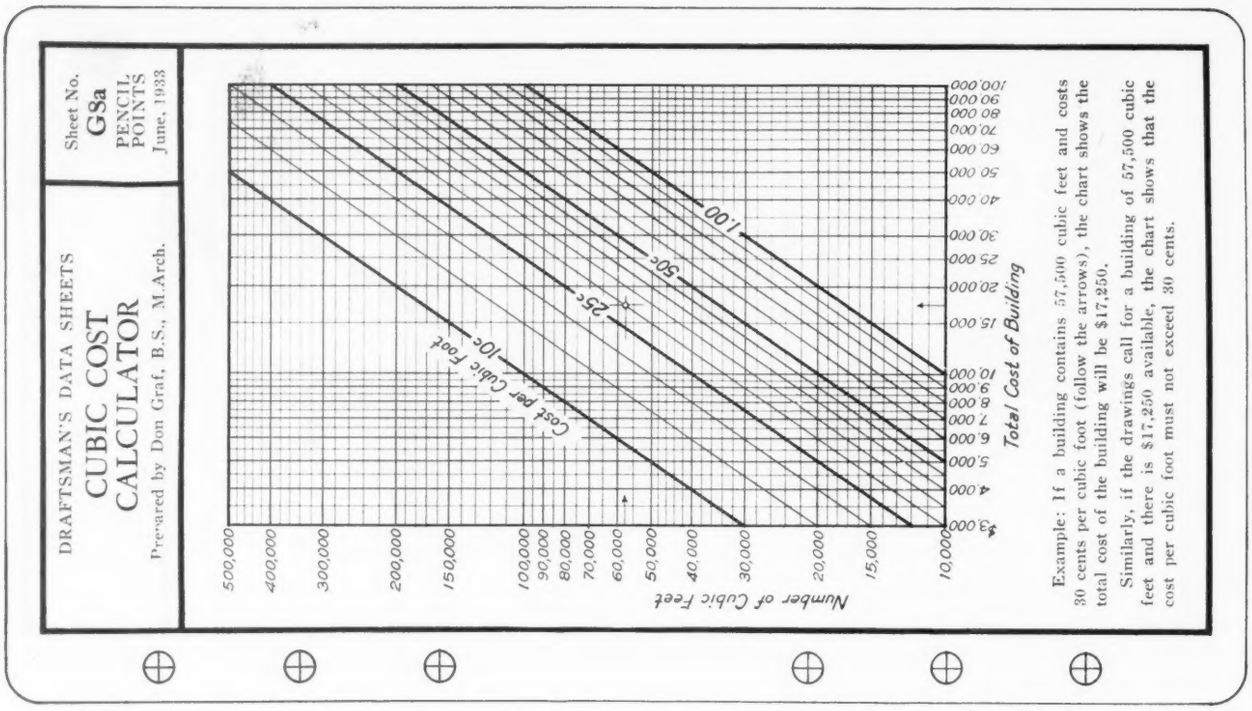
PRATT ARCHITECTURAL CLUB

The Pratt Architectural Club, Brooklyn, N. Y., closed the season with its annual dinner and business meeting, at its headquarters in the Allied Fraternities' Building, on the evening of May 12th. When George Axt, '16, the toastmaster, called the meeting to order, about seventy-five were gathered in the room for dinner and a good time, exuberant with hope and optimism.

The class of '08, celebrating the twenty-fifth anniversary of departure from the portals of their Alma Mater,


DRAFTSMAN'S DATA SHEETS
NORTH VERTICAL SUNDIAL
Prepared by Don Graf, B.S., M.Arch.
Sheet No. F12c
PENCIL POINTS
June, 1933
GNOMON
DIAL
Draw a line AC of any convenient length. Draw AE, making the included angle CAE equal to the complement of the angle of latitude of the place (90° latitude°). AC represents the plane of the dial plate and AE is the plane of the two edges of the gnomon which cast the time-telling shadow. The gnomon may be cut away as shown to any desired shape so long as these two planes are not violated.
About point C describe an arc with radius CD equal to the perpendicular distance from C to line AE, cutting AC at B. Draw lines thru A, B, C, at right angles to AC. These will intersect a convenient line parallel to AC at points A', B', C'. Line AA' becomes the 6 o'clock mark on the dial.
From point B' describe a quadrant of convenient radius as xy. Divide the quadrant into six equal parts of 15° each. From B' draw lines thru the two lower division marks until they intersect CC' at m and n. Lines from m and n continued thru A'' become the 4 and 5 o'clock dial marks.
If it is desired to show half- or quarter-hour marks, the quadrant is divided into 12 or 24 equal parts, the procedure then being the same. Five- or one-minute divisions can then be made accurately enuf on the dial face by eye.
Since the dial is symmetrical the 7 and 8 o'clock marks which converge at A'' are easily found. The sundial must be set with the plate vertically plumb, and the gnomon in a true (not magnetic) north direction.

DATA SHEET NO. F12c. *This sundial will only tell time when the sun is north of the equinox, that is, during the summer months, and then not during the middle of the day.*



DATA SHEET NO. G8a. *When starting plan sketches it's a time-saver to determine approximately the maximum size of building that can be allowed for the money available. This chart will tell you quickly.*

turned out the largest representation. In the group were our old friend Erick Anderson, Harold V. D. Dowden, John R. Harris, Harry L. Skidmore and last, but by no means least, Frank B. Rogers, all present to honor their classmate William Haugaard, Commissioner of Architecture for the State of New York, who was the guest of honor.

As the dinner ended brief greetings were heard from several guests representing other alumni organizations of Pratt Institute. Then the toastmaster asked Mr. A. J. Gompert, '93, to introduce Mr. Peter Grimm, Chairman of the Citizens Budget Committee, and past president of the Real Estate Board of New York, who was guest speaker. Mr. Grimm spoke on metropolitan financial troubles.

Following this address Mr. Haugaard was presented with a tribute, in the form of framed resolutions, as the club member who had brought greatest credit upon the Pratt Architectural Club by his outstanding professional services for the State, under three governors. Mr. Rogers was the spokesman for his class in delivering the eulogy. Mr. Haugaard expressed his deep appreciation of the honor, and as he sat down James C. Magee, '15, club president, read a letter eulogizing the work of Mr. Haugaard, signed by Alfred E. Smith.

At a brief business meeting the following officers were elected for the year 1933-34: President, Arthur Bates Lincoln, '15; First Vice-Pres., Albert F. Edwards, '09; Second Vice-Pres., Harold H. Bulmer, '25; Secretary, William R. Wheeler, '13; Asst. Sec., William Titus, '33; Treasurer, Charles F. Dehm, Jr., '28; Asst. Treas., A. C. Reid, '23. Board of Governors: Louis A. Axt, '25; H. G. Webb, '10; A. L. Guptill, '12; and D. N. Bugel, '22.

AN ANSWER TO MR. HERMANN

To the Editor of Pencil Points

Dear Sir:—

I have just read Mr. Kurt Hermann's letter in May Pencil Points championing American architects, and thus noticed the article by the nameless European draftsman in the preceding issue. I herein wish to commend Mr. Hermann for his insight and sincerely hope that he was right in guessing that its author was a young man. For it is apparently only from young men (young in spirit as well as years), that we can expect such clear-sighted denunciation of our copy-book eclectics.

Today, as for the past many years, heterogeneity is the keynote of American architecture. The mind of the profession at large is still in a pleasant slumber of laissez-faire muck-raking. If our fathers and grandfathers did it, it cannot be the thing for us. The uninformed timidity of the client is used as an excuse for the unimaginative manipulations of dead forms by our architects. Our cities are potpourris of architectural ambiguities and our country places but misplaced transplantings of city structures. On every side we see the puerile and meaningless copies of the styles, frothy efflorescences forming a colossal monument to the deadness of the past and the inagility of the American creative imagination in architecture. Truly, "the mother of the arts" is suffering badly from paranoia.

May I in turn suggest to Mr. Hermann that he study the history of the great architectures that have been so painstakingly copied and try to learn what it was that made them great, for their period.

Lloyd A. Ruocco, San Diego, California.

T-SQUARE CLUB OF PHILADELPHIA

The Fiftieth Anniversary of the founding of the T-Square Club of Philadelphia was celebrated by a dinner and meeting in the Clubhouse, on April 19th. On the walls of the large meeting room on the second floor were displayed a number of sketches and drawings submitted in T-Square Club competitions of 1890-1900, and the original sketch for the Clubhouse made by Wilson Eyre. The prize winning designs submitted in this year's Cope Competition were also exhibited.

Harold L. Watts, President of the Club, called the meeting to order and introduced George Bispham Page,

Chairman of the Celebration Committee and Toastmaster of the evening. Adin Benedict Lacey read the story of the T-Square Club. Wilson Eyre, one of the founders of the Club and the only original officer now living, was presented with the T-Square Club Gold Medal of Honor by D. Knickerbacker Boyd, as a token of the esteem and regard in which he is held by the Club. Arthur Truscott, Walter Smedley and Charles L. Hillman, who also were founders of the Club, spoke briefly of their memories of the earlier days. There were short addresses by Dr. Paul P. Cret, Honorary President, Dean Warren P. Laird, Dr. Charles Z. Klauder, George Howe and Harvey Watts.

The results of the Walter Cope Memorial Prize Competition, which was judged the preceding day, were announced by Roy F. Larson, Chairman of the Committee, as follows: First Prize—James W. Breed; Second Prize—Robert Page; First Mention—George C. Rudolf; Second Mention—Frank D. Dean. The subject of the competition was *A Reviewing Pavilion for Notable Guests.* The jury consisted of Dr. Charles Z. Klauder, H. Bartol Register, R. R. McGoodwin, W. Pope Barney and Grant Simon.

CHICAGO ARCHITECTURAL EXHIBITION

The Architectural Exhibition League Show will be held during the World's Fair at the Architects' Club, 1801 South Prairie Avenue. Both national and local studies of the World's Fair and exhibits of the scholastic work of the leading architectural schools and a number of competition prize drawings will be shown.

NEWS FROM THE COLLEGES

The summer session of the College of Architecture, University of Michigan, Ann Arbor, will commence the twenty-third of this month and continue through August 18th. Courses will be offered in undergraduate and graduate architectural design, in outdoor drawing and painting, and office practice.

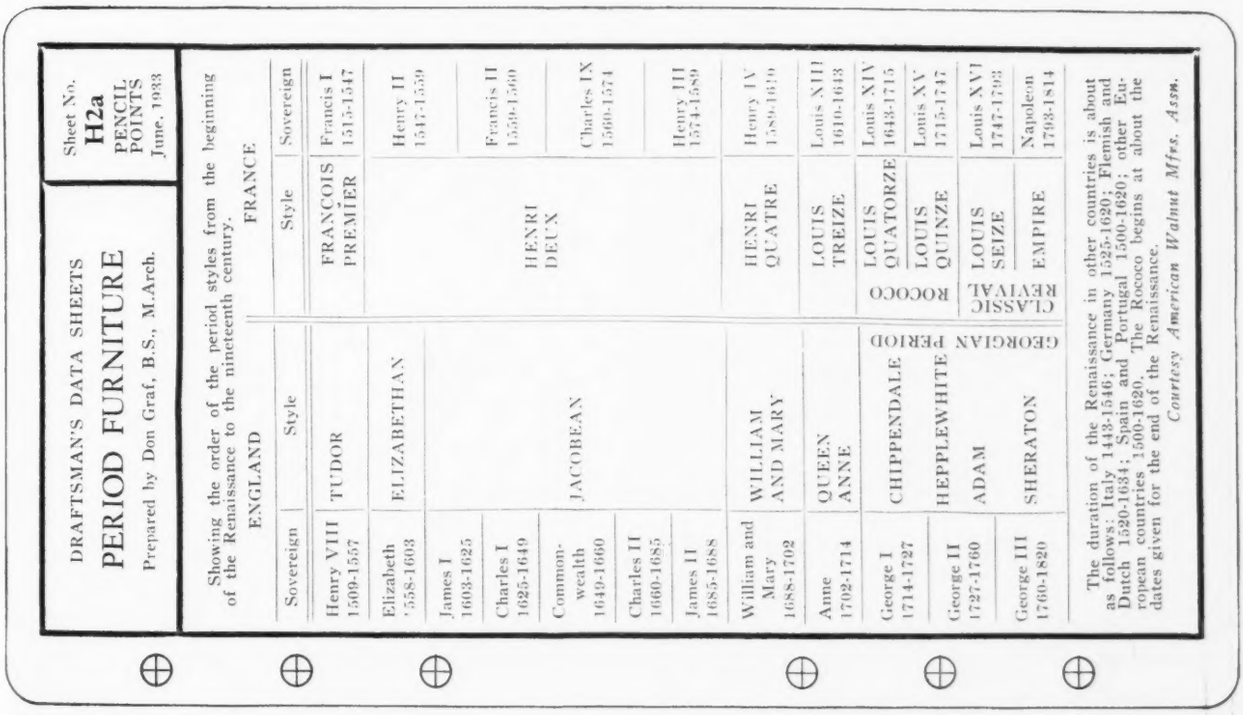
At Columbia University, the skyscrapers which comprise the New York City skyline will be the basis of a course in architecture to be directed by Professor Dillenback and Professor Walsh. This course will start on July 10th and end on August 18th and will be conducted by the University in addition to the regular summer school courses.

The University of the State of New York has announced a number of new courses in architecture which are free to those who are unemployed. Among these are architectural drafting and detailing and, we think of particular interest to our readers, a course to be given by Theodore de Postels, in architectural rendering and perspective. Applications for admission to these courses, as well as others, should be made in person between 9 A. M. and 1 P. M. to the Director, George K. Gombarts, 214 East 42nd Street, New York.

From the Dean of the School of Architecture at Harvard University comes an announcement of a complete reorganization in the courses given by the Department. The new plan of study will become effective for all students who enroll this fall and thereafter. Dean Edgell states that in reorganizing the curriculum of the School of Architecture a broader and more advanced treatment of sound American architectural education will be introduced.

Professor William Emerson, of the Massachusetts Institute of Technology, has announced that Lawrence B. Anderson, Paris Prize winner in 1930, has been appointed Professor of Architectural Design to succeed Professor Jacques Carlu, who will return to France to continue his work as Director of the Fontainebleau School of Fine Arts.

M.I.T. will add a new course to its architectural department and a comprehensive study of city planning will be given at the school beginning next fall. A new scholarship in city planning, created from funds of the Carnegie Corporation, will be awarded a graduate of this new course to enable him to a year's research study in this country or abroad.



DATA SHEET NO. H2a. *For some unknown reason, clients expect a look of intelligent interest to appear on your face when period furniture is mentioned. This outline should help.*

The Erie Chapter Sends Out a Remodeling Checklist

To the Editor of Pencil Points

Dear Sir:—

We are enclosing herewith a copy of folder on Remodeling and Modernizing, which we thought you might be interested in reading.

With the thought of helping to pry loose some of that postponed work with a minimum expenditure on the part of any one concerned with the campaign, the Northwestern Pennsylvania Chapter, A.I.A., appointed a committee to obtain cost data, interview a number of manufacturers, dealers, etc., on the matter of co-operating on the actual cost of same, there being no funds in the Chapter treasury and almost a like amount available from any of the members.

The results of the survey were encouraging so it was decided to have four thousand folders printed; to mail out fifteen hundred of these with a multigraphed letter to a selected list of property owners. The balance was then divided among the architects, manufacturers, dealers, etc.

The actual cost divided among all concerned amounted to the nominal sum of $2.50 each.

It meant considerable work on the part of the committee for there are approximately four hundred and fifty different ideas in the fifty items listed; and since these were mailed out only last week we are unable to tell what the results will be, however, whether the architect receives much in the way of direct benefits or not, we feel that it is bound to help things in general, and no one has spent more than a very nominal sum on it.

We will be interested to have your comment on the idea.

Yours very truly,

Northwestern Penna. Chapter, A.I.A.

By Clement S. Kirby

Chairman Campaign on Modernizing.

Check Through this List of *50* Suggestions for Remodeling and Modernizing. . . . .

Group No. 1

Problems Best Worked Out With Assistance of an Architect.

1—**Develop space in basement** for Recreation Room, possibly with fireplace, or nice light laundry.

2—**Repair or Remodel Porch;** add new porch or enclose present one to make Sun Room; build Sleeping Porch. Install metal porch columns.

3—**Modernize floor plan** of house by combining two rooms in one, changing or removing partitions; provide extra bed room or bath room by subdividing large room, or by use of waste space in attic, or a new addition; convert large closet into an extra toilet or shower room, widen narrow room with bay window etc.

4—**Modernize the kitchen** arrangement for more efficient work; build breakfast nook in unused part of kitchen or pantry, or build new breakfast porch; install new kitchen or pantry cupboards and closets. Build recess for electric refrigerator or ironer.

5—**Build in new book cases,** window seats, china closet, telephone cabinet, folding ironing board, childrens' toy cupboard, drop-leaf counter, drain boards, clothes chute.

6—**Correct defective chimney** or fireplace; repair joints or rebuild top to improve draft; construct new chimney for wood-burning fireplace. Consult an Architect.

7—**Line unfinished attic space** with wall board or plaster to create extra room or play room.

8—**Install improved insulating materials** in the roof or attic floor construction to reduce heat losses in winter, and to make second story or attic cooler in summer; also consider possibility of insulating side walls of house. (*Note: The heat loss through a second floor plastered ceiling to an unheated attic is 25 to 30 per cent of the second floor heat.*) *Seal your house against air infiltration and heat loss*

9—**Install cedar closet,** or cedar lining in some existing closet; install dormers or regular windows to make Attic more useful.

10—**Beautify, and make more livable,** the dining room, den or bed rooms by building a tiled recess with small mantle for modern room heater, using the new gas logs, radiant fire, or basket with imitation coal for gas or electricity. (*Note: No chimney necessary with these.*)

11—**Repair existing roofs,** gutters, leaders, flashing; reroof with wood, asphalt, asbestos, slate, clay tile, or metal shingles.

12—**Construct new removable vestibule;** install disappearing stairway for space economy.

13—**Install over-head garage doors** to save space and repair bills; enlarge present garage or build new one.

14—**Install package or milk receiver,** coal window, garbage container, mail chute; build linen closet; build insulated vegetable room.

15—**Install pine,** oak, chestnut, gum, or other plank or panelled walls in living room, dining room, den or library.

16—**Install fuel lift** from basement to point near living room fireplace.

17—**Provide outside accessories** such as window boxes, trellises, bird houses, garden furniture, etc., ready for use in spring; erect new fences, gates, arbors, pergolas, garden structures, and wrought iron railings.

18—**Modernize exterior** of house with shingles, stone or brick veneer, or water-proof stucco; brighten and preserve old brick with well known brick stain.

19—**Plaster basement ceiling** on metal lath for fire protection, better appearance, cleanliness; or line with one of the new wall boards; cover defective ceilings with fabric, wall board or pressed metal to eliminate future repairs.

20—**Correct damp basement** walls and floors. Have examination made of the foundations, sills and other supporting members. Consult an Architect.

21—**Install real tile,** imitation tile or marble wainscoting in bath rooms, kitchen, or service part. (*Note: Perfect limitations now available in large sheets—waterproof and non-warping.*) *Consult an architect for suggestions.*

22—**Install a modern and efficient automatic oil burner or coal stoker.** (*Note: Great strides have been made in the design of oil burners and coal stokers, and the reduction in price is notable.*)

23—**Install new efficiency type boiler** or furnace with automatic temperature control. Install humidifying equipment to create more healthful conditions. (*Note: Now possible with any type of heating system.*)

24—**Install modern air conditioning system.** The newest idea in heating. (Consult an architect regarding proper system for your needs.)

25—**Remodel present house or other building for small efficiency type apartments, or combination store and apartments. Consult an architect regarding an examination of your property.**

Group No. 2

Miscellaneous

26—**Build or repair** cement driveway; resurface with crushed stone, slag or cinders; reset brick or flagstone walks where lifted by frost. Construct new concrete, stone, or brick walks or steps.

27—**Prepare window or door** screens for summer's use, including rewiring and repairing. Consider new screens of modern type, either wood or metal. (*Note: Bids are made on Erie*) Install storm windows, combination storm and screen doors

28—**Install door bed** in sewing room, library, or enclosed porch to make it a convertable bed room for occasional guests. Install modern closet fittings such as shoe racks, hanger rods, drawers, shelves, etc.

29—**Modernize obsolete interior** trim and doors, replacing with new, or refinishing. Refinish hardwood or painted floors, or cover existing floors with thin hardwood flooring. Remove squeaks from floors; fill cracks and repair where necessary.

30—**Install wall handrail** on stairway for greater safety; reconstruct cellar or other stairways; install gate at head of stairs to safeguard children. Install modern wrought iron stair railing.

31—**Repair cracked or loose** plaster on walls or ceilings.

32—**Modernize existing bath room** with new wall treatment, flooring, fixtures, medicine cabinet, or other accessories.

33—**Install linoleum,** real tile, rubber tile, cork tile, masonite tile, mastic tile, or other decorative composition floors in selected rooms.

34—**Install gas** or electric wall heater in bath room.

35—**Replace common glass** with ultra violet ray (health) glass in nursery, sun porch, or throughout. (*Note: Same price as regular glass.*) *Install full length mirrors on bed room or closet doors.*

36—**Repaint exterior of house;** restain and preserve the shingles. Repair and repaint fire escapes.

37—**Redecorate with paint,** plastic paint, wall paper, wall fabric, beautiful wood veneer (goes on like wall paper), or other material in one or more rooms. repair and paint ceilings throughout the house to brighten the rooms.

38—**Install copper pipes** and fittings for hot water lines to eliminate rust and low water pressure. Install new sink in kitchen or pantry (enameled iron or monel metal.) Install an electric dish washer.

39—**Install new hot water heater** or tank. Insulate present tank for greater efficiency. Install non-scalding shower mixer for protection of yourself and employees.

40—**Install garbage** and trash incinerator of type to suit your particular need.

41—**Install booster fan** on warm air heating system for more efficient heating. Correct the heating of that cold room. Convert warm air heating plant to a forced circulation system with automatic humidification.

42—**Install shields** on radiators; change location, or replace with modern concealed radiation. Convert old one-pipe steam heating system to vapor-vacuum system for more uniform heating and fuel economy.

43—**Install new concealed** radio wiring to permit use of extension speakers in bed rooms, dining room, kitchen, attic or basement recreation room. (*Note: The average standard commercial receiver will operate from two to ten reproducers, permitting use of radio in any part of the house without moving the receiver.*) *Install remote control for radio receiver, built-in speakers, etc.*

44—**Modernize lighting system** with new fixtures; install extra electrical outlets to eliminate long cords to lamps, clocks, radios, etc. (*Note: Hundreds of combinations now possible under the* **standard** *side wall plate.*) *Have wiring system checked against overload, and for compliance with insurance requirements and your own safety.*

45—**Install modern concealed door bell,** buzzer, and signals (*Note: These can now be installed* **under** *a standard side wall plate in the kitchen.*) *Provide low voltage current in play room for operating electric toys. Provide weatherproof connections for outside Christmas lighting*

46—**Install a ventilating fan** in kitchen; . intercommunicating telephone system.

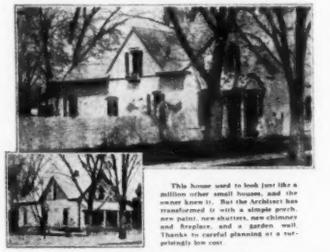
47—**Install new low-coat photo-electric** relay switch for control of any electric device such as motors, signs, signals, alarms, or wherever it is desirable to automatically control the opening of doors by the interruption of a light beam.

48—**Install weatherstripping** on exterior doors and windows; stop that cold draft under bed room or other doors with automatic door-bottoms.

49—**Modernize kitchen and laundry** with electric refrigerator, ironer, range, new trays, washing machine, dryer or water softener.

50—**Install ash container** under floor at boiler or furnace with overhead device for removing cans.

"When everyone decides that now is a good time to build, the BEST time to build will have passed."



This house used to look just like a million other small houses, and the owner knew it. But the Architect has transformed it with a simple porch, new paint, new shutters, new chimney and fireplace, and a garden wall. Thanks to careful planning at a surprisingly low cost.

Consult an Architect

He Can Help You Solve Your Problems

WOULD it pay you to remodel or modernize your home? . . make it more livable . . more rentable . . more salable? Are you wasting fuel in trying to heat your home?

Have you hotel rooms or apartments vacant because they are old-fashioned? Have you a store that is losing trade to the smarter looking establishment down the street? Have you an antiquated office building, loft or factory?

The architect is trained in the economical solution of just such problems . . he knows how to use existing space and structure to best advantage . . he knows the relative values of materials and equipment. His training enables him to **visualize the results** and advise accordingly . . to plan and supervise every detail, to the end that your building will be safe, attractive, and economical to maintain.

Consult an Architect. In many cases perhaps a consultation will prove sufficient, enabling you to proceed with assurance; in other cases an outline "sketch" or "study" following the consultation may better solve the problem; in larger operations, plans and specifications may be advisable.

This service will prove to be the best . . and perhaps the cheapest item of your project.

Consider it now, while prices are Low. Call one of the architects listed below and talk it over with him . . it will pay you.

Registered Architects

CLEMENT S. KIRBY
321 Commerce Bldg. 23-772

MEYERS & JOHNSON
821 Commerce Bldg. 24-785

FRED A. FULLER
721 Commerce Bldg. 22-628

WALTER T. MONAHAN
4128 State St. W93-137

SHUTTS & MORRISON
319 Marine Bank Bldg. 22-414

G. W. STICKLE
228 Commerce Bldg. 24-919

J. HOWARD HICKS
1728 Muese St. 33-128

TURN TO THE BACK PAGE FOR LIST OF CONCERNS COOPERATING . . . . . .

Modern Air Conditioning, 1

By Harold L. Alt

Editor's Note:—*The first part of this article, presented this month, is devoted to a discussion of the basic factors upon which the modern science of air conditioning is founded. An understanding of these factors by the architect is essential if he is to know his way about among the various types of apparatus now on the market and which he may be called upon at any time to specify for jobs ranging in size from large auditoriums or department stores right down to the small house or apartment. Part 2 will cover the various types of equipment used in central plants for modern air conditioning, as well as the application of unit air conditioners. Charts shown in Figures 3, 4, 5, 6, and 7 are based on data developed by the A.S.H.V.E. Research Laboratory, Bureau of Mines, Pittsburgh, Pa.*

In recent years, a more and more predominating tendency to separate the terms "ventilation" and "air conditioning" is becoming apparent, *ventilation* gradually being relegated to its original meaning of *a movement of air* while air conditioning is coming to be the term applied to the matter of *air treatment*. Some engineers expect ultimately to see the complete obsolescence of the word "ventilation" although this, perhaps, is an enthusiast's viewpoint. In years gone by the idea which formed the basis of all ventilation theory was that it was necessary to approach (inside of the structure) an air condition as nearly approximating the outside air condition as possible except perhaps in regard to the matter of temperature. By this was meant that the greater the amount of air circulated through a building the less would be the relative contamination per cubic foot and the nearer this air would approach that of the outside air in average condition. Of course it was expected to heat this air to a comfortable degree, and it was so heated, with the resulting heavy coal consumption and high cost of operation.

This viewpoint is now found to be entirely erroneous and has been discarded by the leaders in the industry. In fact, the old conception of ventilation was largely a by-product of the medical profession's misconception of the physical and bodily requirements as far as air is concerned. The heating and ventilating engineer always has had to labor under the handicap of being able to produce any reasonable air conditions inside of a building as soon as anyone told him what was desirable and then having no one to state authoritatively just what these conditions should be. After years and years of this uncertainty the engineers themselves began to feel that to arrive at any satisfactory conclusion a certain amount of research work would be necessary. This conclusion was crystallized by the studies made by the New York State Commission on Ventilation which made some very exhaustive tests, particularly on school ventilation conditions, and published the results of these tests as indicative, but not conclusive, of some of the features which research might disclose. The extreme interest in the subject of ventilation led to widespread discussion of the Report of the above-mentioned Commission and the advocates of various theories eagerly sought for confirmation of their views in the data collected by this body. One of the unexpected results of this report was the rise of the so-called "window ventilation" idea which claimed to be justified by the investigations of the Commission.

Worse than this, certain parties, either through carelessness or a mistaken idea of economy, began urging that the open window was the *only* necessity of good ventilation, entirely forgetting that the Commission had laid down certain requisites to go with the open window and without which the open window is no more than just that. The controversy soon reached the stage of intense feeling between the ones who urged that an open window was all that was required (pointing to the economy of such an installation as its justification and to the Commission's report as upholding it) and the more conservative engineers who foresaw that uncontrolled ventilation never could answer the question satisfactorily, owing to the fact that window ventilation was subject to the idiosyncrasies of the individual teacher and the wind as to how much or how little air actually would be received.

With this controversy as an impetus, many heating and ventilating engineers felt that it was high time that some *facts* were collected that could not be misconstrued in their implications and which would be basic in their nature. As a result of this feeling the Research Laboratory of the A.S.H.V.E. was formed to work in conjunction with the Bureau of Mines and with the experimental equipment of this bureau. This work now has been going on for a number of years and already has resulted in establishing such items as the Comfort Zone and Comfort Line for both winter and summer, Effective Temperatures, Effects of Air Movement on Effective Temperatures, Total Heat Emitted by the Human Body under Different Surrounding Temperatures, the division of this total heat into sensible and latent heat, and a Heat Meter for determining the heat transmission through structural materials in a consistent and authoritative manner. The work is still going forward. Many of the older ventilation theories have suffered severe jolts as a result of this research work and it is not beyond the realms of possibility that more theories will have to be discarded in the face of cold and scientific facts that may be uncovered in the future.

As this research work was in progress, cooling work began to assume a much greater importance in ventilating installations. This was at first confined largely to theater work and auditoriums where the effect of body heat and closely confined human beings is at a maximum. It was about this time that "air conditioning" began to be talked about and the use of the term was at first rather limited to ventilation where cooling was done. Since then, air conditioning has grown to cover air treatment including cleaning, humidifying, cooling, deodorizing, etc., as distinguished from air which is injected into the structure either heated or unheated but otherwise without any treatment to make it more desirable for human use and comfort.

One of the first factors which made itself felt when the artificial cooling of buildings was undertaken was that of cost of operation. It soon was demonstrated that if all the "foul" air removed from the interior were discharged to the atmosphere and an entirely new supply of fresh air were furnished constantly from the outside, the cost of operating the plant would, in the majority of cases, be prohibitive. This is because the "foul" or exhaust air

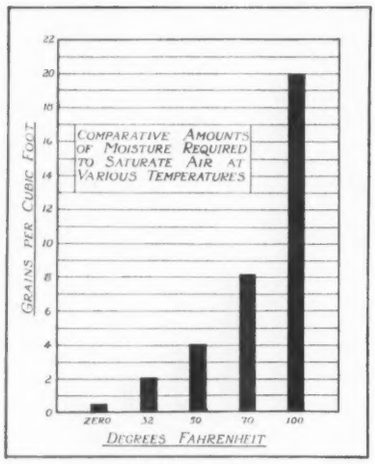


FIGURE 1

has been cooled and is at the temperature of the cooled space when exhausted, while the outside air may be considerably higher in temperature, depending on what the outside temperature may be at any particular time.

The second loss occurred in the fact that air supplied to the interior for cooling purposes usually had to be dehumidified, or have part of the moisture removed, which made the air in the cooled interior dryer than the outside air. When fresh air constantly was used, this dehumidification was carried on at 100% all the time. On the other hand, if a large portion of the "foul" air which has been dehumidified and cooled can be taken from the interior of the building and retreated by means of "recirculating" through the apparatus, then the load on the equipment correspondingly is reduced and a considerable economy effected. From this the practice of "recirculation" has been developed and actual experience in theaters has shown that about 66-2/3% to 75% of all the air supplied may be recirculated before the odors accumulating become pronounced enough to become objectionable.

This practice of recirculation has now extended to practically all "comfort" cooling installations—by which is meant all cooling done for body comfort as distinguished from "process" cooling in manufacturing and industrial plants. A score of years ago an engineer suggesting taking the air out of the "foul air sewer," by which some architects used to designate the outboard exhaust duct, would have been classed a disgrace to the profession. Now, however, all engineers are doing this very thing in view of the FACT that it has been proved to be practical and that no bad results on occupants have been indicated in any way.

Humidity and Its Effects

Humidity and its effects on the warmth sensations of the human body also has received much more careful attention than previously and is one of the few factors in ventilation which has not had its basic principles upset by research and experiment. It was known that heavily humidified air produced greater discomfort to the body in temperatures considerably above and below 70° F., but just how these sensations correlated with sensations produced by dryer air was not known and was only determined after exhaustive experiment. Humidity is one of the most important features in cooling, as it determines not only how much comfort or discomfort will be experienced under the conditions maintained in the building but also determines to a very great extent the amount of refrigeration necessary due to the relatively large amount of refrigeration capacity required for the removal of moisture from the outside air. Cooling the incoming air is only a portion of the refrigeration load; the larger part usually consists of the removal of moisture either from the incoming fresh air or from the recirculated air which has picked up moisture in the building from various sources such as the human body, damp clothes, vapor from steam operated equipment, etc.

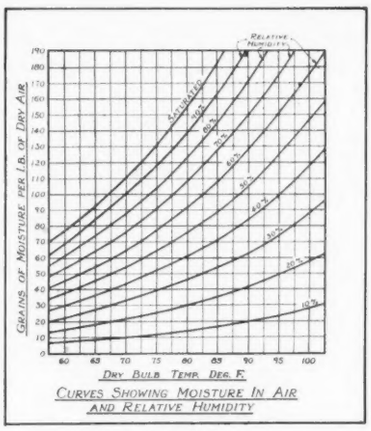

RELATIVE HUMIDITY
SATURATED
GRAINS OF MOISTURE PER LB. OF DRY AIR
DRY BULB TEMP. DEG. F.
CURVES SHOWING MOISTURE IN AIR AND RELATIVE HUMIDITY

FIGURE 2

Each pound of air is capable of carrying a certain amount of water vapor at any given temperature and no more. If this amount of vapor is exceeded, precipitation results and the excess moisture is squeezed out of the air. The actual weight of vapor in air is called the *absolute humidity* and, when the air can contain no more vapor without precipitating, the air is said to be *saturated*. If, however, the air is not saturated and only contains a fraction of the moisture which it could carry at that particular temperature, then the amount *actually contained* divided by the amount which it *could contain* will give a percentage which is termed the *relative humidity*. So relative humidity may be defined as the percentage of maximum moisture which the air may contain at any specified temperature; of course, when this percentage reaches 100, the air is saturated. See diagram, Figure 1.

It follows that if air has a higher vapor carrying capacity in warmer temperatures and a lesser vapor carrying capacity at lower temperatures as shown in Figure 2, it is possible to saturate it at a temperature sufficiently low so that when it is raised up to the temperature at which it is utilized the relative humidity can become whatever is desired. For example, it has been found that air saturated at a temperature between 50° F. and 55° F. will have a relative humidity around 50% when raised to 70° F. in the room. This is considered almost ideal. On the other hand, the condition of 50% relative humidity produces on the human body a sensation of comfort comparable with some higher temperature with a lower relative humidity and with some

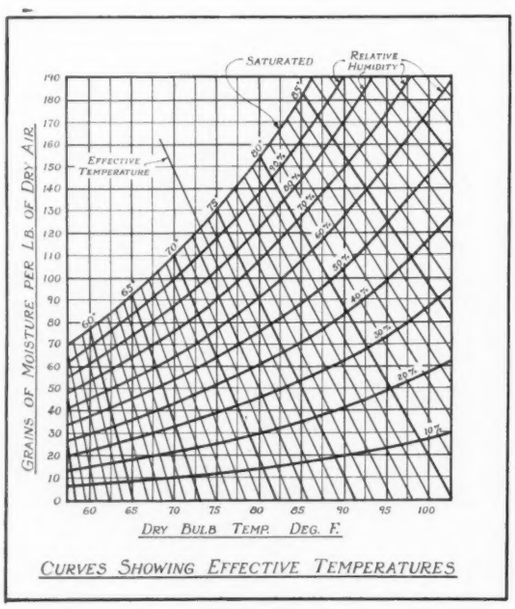
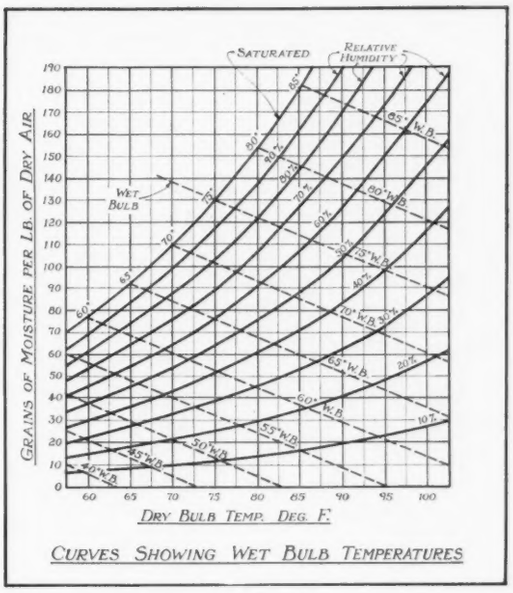


FIGURE 3

lower temperatures with higher relative humidities, so that almost exactly the same temperature sensations will be experienced under various differing conditions. It is highly desirable to know what temperature will be necessary to give the most desirable comfort condition under various differing relative humidities and air conditions so that one or the other can be adjusted to give the maximum comfort condition. The lines determined by experiment for these different conditions are known as the effective temperature lines or simply "effective temperature" and are based on the comfort condition at the dry bulb temperature noted and with saturated air at that temperature.



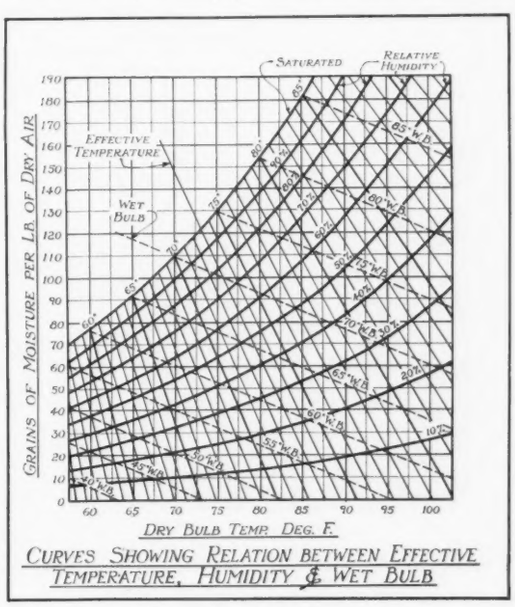
CURVES SHOWING WET BULB TEMPERATURES

FIGURE 4

Effective Temperature

All work in air conditioning, and even in heating as well, henceforth must consider "effective temperature" rather than dry bulb temperature. The dry bulb temperature is that indicated on the ordinary dry bulb thermometer and it has been realized for some time that the sensation of warmth experienced by the body is greater in heavily humidified air than it is in dryer air of the same dry bulb temperature owing to the evaporation from the skin being greater in the dryer air. Careful tests have been made and lines of effective temperature have been developed showing what the effective temperature, or body sensation of warmth, will be for every dry bulb temperature and percentage of humidity that may be expected in practice, these being indicated in Figure 3. For example, 70° F. dry bulb and 50% relative humidity fall on the winter comfort line and will satisfy 97% of all persons; but this is an effective temperature of 66° F. A dry bulb of 68° F. and a relative humidity of 70%, or a dry bulb of 72½° F. and a relative humidity of 20%, will give exactly the same temperature sensation to the body, will satisfy 97% of all persons and also will fall on the 66° F. effective temperature line.

Consequently, the fact that a thermometer hanging on the wall says 68° F. does not prove that the room may not be producing comfort conditions equal to one having a similar thermometer reading 71° F. provided that the humidity conditions are right in the two cases to do so. This shows that the dry bulb thermometer no longer can be recognized as the true index to room temperature and upsets another basic — or supposed basic — foundation on which heating and ventilation formerly were designed.



CURVES SHOWING RELATION BETWEEN EFFECTIVE TEMPERATURE, HUMIDITY & WET BULB

FIGURE 5

Wet Bulb and Dry Bulb Temperatures

The use of the wet bulb and dry bulb thermometers (usually mounted on a board having a handle and swivel joint so that it can be rotated by hand) is the method employed to ascertain the relative humidity in any room or space. The dry bulb thermometer is the ordinary Fahrenheit thermometer and gives a temperature reading corresponding with the ordinary wall thermometer; the wet bulb is a similar thermometer except that a small piece of damp wicking is placed over the bulb and when swung around in the air this wicking begins to have the water evaporated or—in other words — starts to dry. The process of evaporating water requires the supplying of a certain amount of heat, this heat being the latent heat of evaporation under atmospheric pressure, and the result is that the wicking is cooled and causes a reduced reading on the thermometer to which it is attached. This reduction is termed the wet bulb "depression" and begins at zero when the air is saturated, reaching a maximum when the air is absolutely dry. Of course absolutely dry air is never obtained naturally but the lines shown in Figure 4 indicate how much the wet bulb will read below the dry bulb for any given percentage of relative humidity and at any given dry bulb temperature.

Conversely, if the wet and dry bulb readings are obtained in a room, the corresponding percentage of relative humidity at the room temperature can be obtained from the same chart. The reason there is no depression when the air is saturated is because that air under such a condition can absorb no more moisture and therefore there is no evaporation from the wicking and no cooling effect on the wet bulb. It must not be forgotten that vapor would occupy the same space if no air were present but as air is always present it is customary to speak of air rather than vapor. The relation between effective temperature, wet and dry bulb temperatures, and humidity is indicated in Figure 5.

The Comfort Line

The comfort line may be defined as the degree of *effective* temperature at which about 97% of the average run of persons will feel comfortable; it is around 66° F. effective temperature in the winter season and 71° F. during the summer season. It is obtained entirely by experiment and will vary somewhat with persons slightly active or

sitting still, and with still air or a slight air movement. The figures of 66° F. effective temperature for winter and 71° F. for summer conditions are for persons normally clothed, slightly active, and in practically still air conditions. It has proved impossible to find any temperature, or combination of temperature and humidity which will suit 100% of the population. This suggests taking a liberty with Lincoln's famous statement so that it should be made to read, "You can't suit all of the people any of the time" as far as temperature and air conditioning are concerned.

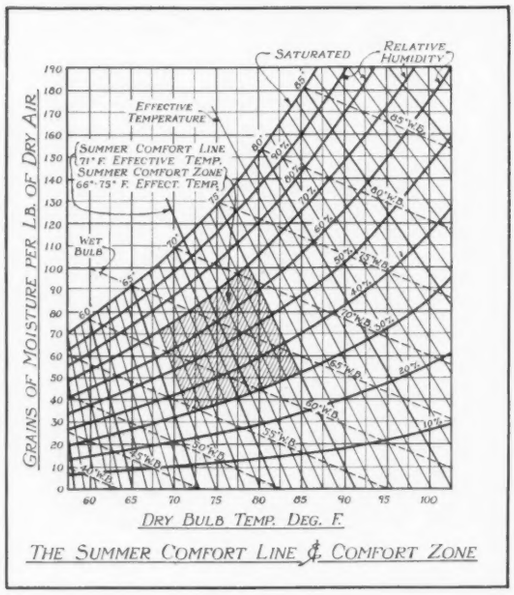


FIGURE 6

The Comfort Zone

On each side of the Comfort Line there will be found a diminishing percentage of people who are satisfied by the effective temperature until a minimum of 50% of the occupants are suited. This area is termed the Comfort Zone; it extends 3° F. effective temperature below the Comfort Line and 5° F. effective temperature above the Comfort Line for winter conditions. In summer it extends 5° F. below the Comfort Line and 4° F. effective temperature above the Comfort Line. This brings out a very simple definition of the Comfort Line as including any set of conditions under which 97% to 98% of the people are comfortable and the Comfort Zone as any set of conditions under which at least 50% of the people are comfortable. Experience has shown up one very peculiar fact in regard to the summer Comfort Zone and this is that, in an artificially cooled building, it is not practical to keep the effective temperature within the summer Comfort Zone on the hottest days. This is simply because such a condition inside of the building produces too much of a temperature shock to persons coming in from the outside conditions and is likely to result in colds before the bodies of the newcomers can re-adjust themselves to the more comfortable set of conditions, however desirable these conditions may be for long-time intervals of occupancy. The maximum difference which now is considered as close to the desirable limit is about 10° F. effective temperature below the outside effective temperature. Comfort lines and comfort zones for winter and summer are shown in Figures 6 and 7.

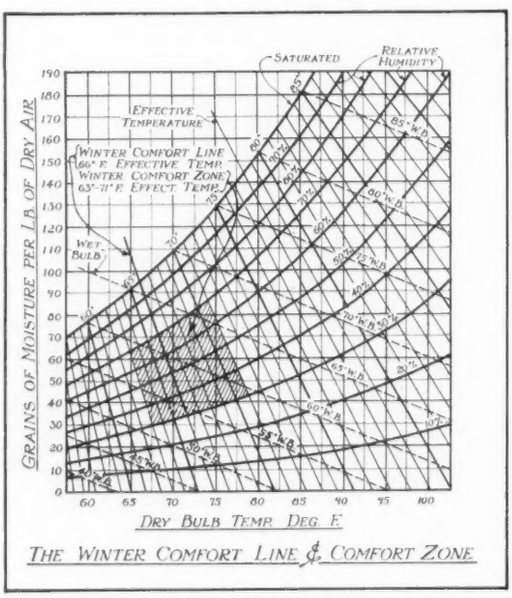


FIGURE 7

Air Movement

Air movement in a room always has been a thing which engineers have tried to guard against even with purely ventilating systems; register outlet velocities were kept down to 250 feet per minute through the grille; inlet registers were placed 8 feet above the floor to avoid face draughts on people passing such outlets; registers were made of moderate sizes on the supplies; and so on. When cooling was first experimented with, the danger of draughts became even a more serious question as it was found that, while draughts of warm air were objectionable, draughts of cooled air positively were dangerous and gave rise to many complaints.

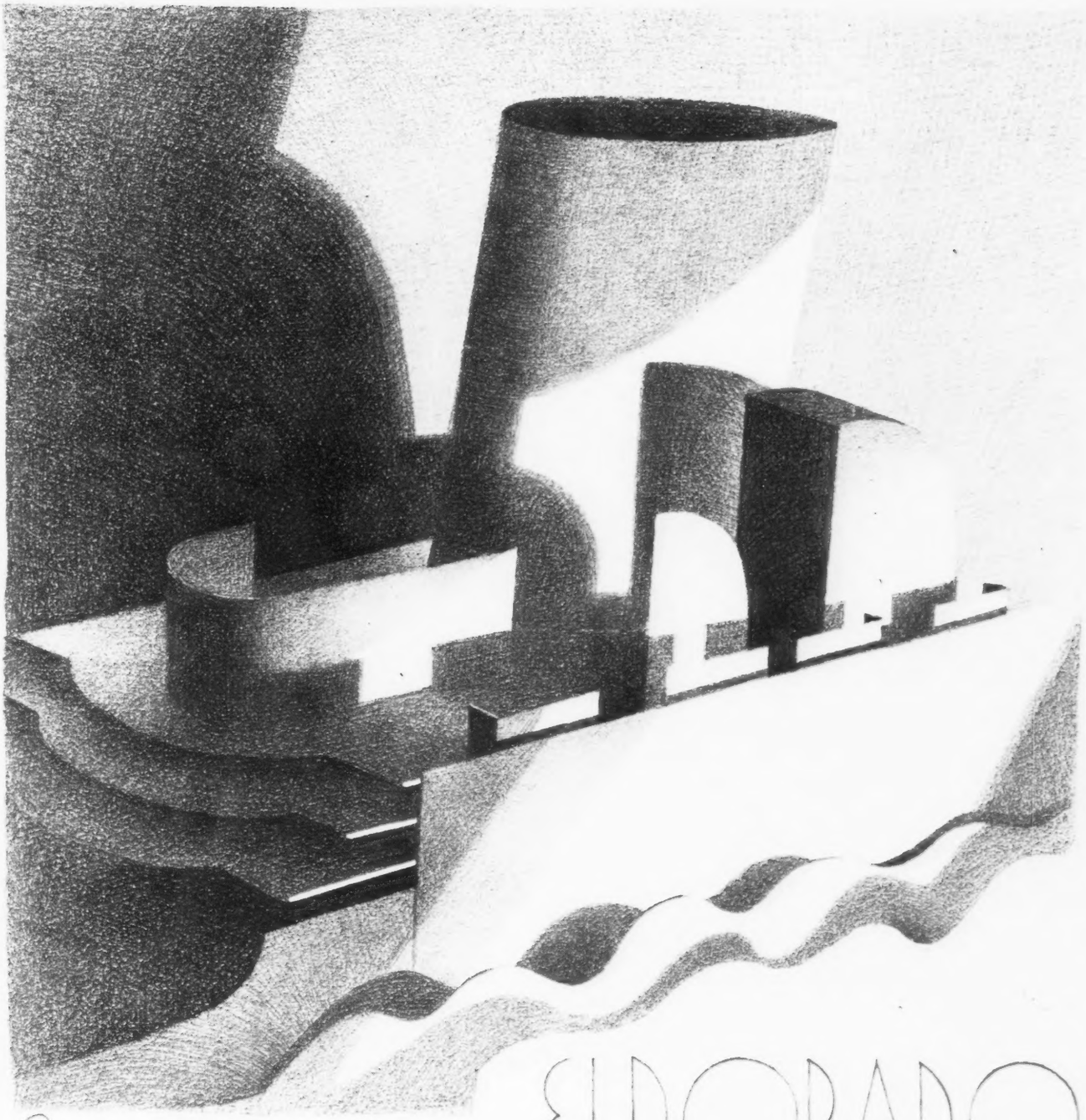
Even greater efforts at distribution proved to be necessary and the introduction of air at temperatures more than 15° F. below that maintained in the room indicated that the air was likely not to diffuse quickly enough before striking the nearest occupants. Some designers even like to go no lower than 10° F. below the room temperature. Yet air movement in a room as low as 100 feet per minute will produce a feeling of coolness equivalent to a drop of about 1½ degrees in effective temperature and a movement of 300 feet per minute will produce a drop in effective temperature of four degrees in the effective temperature. This fact has given rise to systems now on the market which claim to produce "comfortable" conditions by the use of high velocity air which is not artificially cooled. Undoubtedly some air movement is better than no air movement, but further than this there seems to be little to recommend these systems outside of lower first cost of installation.

For example, if the interior heat developed in a room is such as to raise the room temperature five degrees above the outside for the quantity of air being supplied, then it is evident that a velocity of air movement in the room must be maintained at about 500 feet per minute in order to hold the room simply at the equivalent outside temperature. This velocity is too high for practical use as it is about twice as much as that attained through the ordinary supply grille. Lower velocities will do proportionately less but there is no gainsaying that the conditions in the room with any air movement at all will be better than simply with still air. To this extent such systems will be effective.

Body Heat

The total heat given off from the average human body when slightly active is very nearly a constant amount of 400 Btu. per hour from 65° F. to 87° F. effective temperature. This has been accu-

(Continued on page 26, Advertising Section)



EVEN a paper world—as the one built and sketched for you every month, by Ernest W. Watson, with Eldorado, the master drawing pencil—must have its paper ships, to sail its paper seas.

This ship is perhaps as close a copy as any of the series. As close to reality, of course. The waves are rather high, and the bridge can be seen to be only a curved strip of paper. But, we must repeat, these Eldorado Abstracts are for the sheer purpose of developing skill in tone composition and the use of the proper degrees of lead in securing effects.

To go in for paper-ship sketching yourself you'll need Eldorados 3B, 2B, B, F, H, 2H, and 3H. Do not rub any of the tones. A better effect is achieved, and skill is better developed, when you do not. Rely solely on your pencil.

And that's why we say, use Eldorado. For Eldorado gives you the constancy of degree you'll need—a smooth, even, unchanging flow of tone. You *may* find it necessary to use a kneaded eraser to pick off overemphasized tones. If so, use it.

After you've arranged your models, play with the light a while to get proper effects. This is a profitable pastime. Joseph Dixon Crucible Company, Dept. 167-J, Jersey City, N. J.

SERVICE DEPARTMENTS

THE MART. In this department we will print, free of charge, notices from readers (dealers excepted) having for sale, or desiring to purchase books, drawing instruments, and other property pertaining directly to the profession or business in which most of us are engaged. Such notices will be inserted in one issue only, but there is no limit to the number of different notices pertaining to different things which any subscriber may insert.

PERSONAL NOTICES. Announcements concerning the opening of new offices for the practice of architecture, changes in architectural firms, changes of address and items of personal interest will be printed free of charge.

FREE EMPLOYMENT SERVICE. In this department we shall continue to print, free of charge, notices from architects or others requiring designers, draftsmen, specification writers, or superintendents, as well as from those seeking similar positions. Such notices will also be posted on the job bulletin board at our main office, which is accessible to all.

SPECIAL NOTICE TO ARCHITECTS LOCATED OUTSIDE OF THE UNITED STATES: Should you be interested in any building material or equipment manufactured in America, we will gladly procure and send, without charge, any information you may desire concerning it.

Notices submitted for publication in these Service Departments must reach us before the fifth of each month if they are to be inserted in the next issue. Address all communications to 330 West 42nd Street, New York, N. Y.

THE MART

B. C. Holland, 721 Berea Ave., Gadsden, Ala., has the following for sale: copies of PENCIL POINTS for August, 1928; May, 1929; August through December, 1931; 1932 complete. Also *Perspective*, by Wilson; *Perspective*, by Hatton; *Lettering*, by Jacoby; books used in a home study art course on Illustrating and Cartooning; three I.C.S. books on drawing and delineation. Make offer.

A. W. Wallace, 41 Cornwall St., Halifax, N. S., Canada, would like to purchase the following copies of *The Architectural Record:* December, 1895, vol. 5, pages 1-48; January, 1910, vol. 27, pages 1-120; January, 1911, vol. 29, pages 1-41.

Simon Gorewitz, 55 Van Ness Place, Newark, N. J., has the following for sale: Fletcher's *History of Architecture*; *The Orders of Architecture of Vignola*, Esquie; *One Hundred Selected Plates*, D'Espouy; The University Prints, Series G; European Architecture; also a set of Keuffel & Esser "Excelsior" drafting instruments, nine pieces.

The Burnham Library of Architecture, Art Institute, Chicago, Ill., would like to obtain the following: *Bulletin of the Beaux-Arts Institute of Design*, October, 1924 (Vol. I), through October, 1928 (Vol. IV); *American Institute of Architects*, Proceedings of the Conventions for 1877, 1878, 1919, 1924, 1925, and 1926.

Tilford Moore, 850 Charles Street, St. Paul, Minn., has the following *White Pine Series* for sale: all copies from Volume 1 to date. Vol. 1 through 16 are bound, 2 volumes to a binding. Subsequent issues are loose. Will sell the loose copies separately if desired.

Eugene J. Lang, 18 East 48th Street, New York, N. Y., would like to obtain a copy of the October, 1932, issue of PENCIL POINTS.

501 Fifth Avenue, corner 42nd Street, New York: Will sublet portion of architect's office with telephone and stenographic service, or as may be desired. Studio light in drafting room. Communicate with Arthur C. Jackson at that address.

J. Krakow, 1760 Washington Avenue, Bronx, New York, would like to trade a PENCIL POINTS spring back binder, good condition, for a copy of Freese's *Perspective Projection* or a six-inch transparent protractor (standard make).

E. R. Gilbert, 2801 Stonewall Avenue, Richmond, Va., has for sale 7 copies of the *White Pine Series*.

J. B. Wolstein, 975 Heyl Avenue, Columbus, Ohio, has the following copies of PENCIL POINTS for sale: March, 1923; April, 1924; August through December, 1929; January through September, 1930. Price 25c each or $3.00 the lot.

Calvin T. Burke, 2038 Weyer Avenue, Norwood, Ohio, student of architecture, will pay the postage if someone would be kind enough to send him copies of PENCIL POINTS from April through September, 1932.

John R. Poole, 145 Lytton Blvd., Toronto, Ont., Canada, would like to purchase the twelve textbooks that comprise the course in Commercial Art of the Federal Art Schools. State price and condition.

Harold T. Troxell, 1325 Walnut St., Allentown, Pa., has for sale copies of the following: Harbeson's *Study of Architectural Design*, Kelly's *Early Connecticut Architecture*, and Mauch's *Architectural Orders of the Greeks and Romans*. All in excellent condition.

PERSONALS

EDWARD E. ASHLEY, CONSULTING ENGINEER, has opened an office at 10 East 40th Street, New York, for the general practice of mechanical, electrical and sanitary engineering, including air conditioning, elevators, Diesel and power plant equipment and modernization.

OSCAR A. DE BOGDAN, ARCHITECT, has opened an office for the practice of architecture at 35 Lawrence Road, Scarsdale, New York.

THE SMALL HOUSE ADVISORY SERVICE has moved from 521 Fifth Avenue to 247 Park Avenue, Room 1017, New York.

WALTER POLLATZ, ARCHITECT, has moved from 522 E. Meinecke Avenue to 1860 N. 26th Street, Milwaukee, Wis.

GEORGE W. SABIEL, ARCHITECT, has moved his office from 101 Park Avenue to 104 East 36th Street, New York.

SUKERT & CORDNER, ARCHITECTS, formerly at 415 Brainard St., Detroit, Mich., have dissolved partnership. Lancelot Sukert is now located at 79 Westminster Avenue and G. Frank Cordner at 5063 Spokane Avenue.

THOMAS LARRICK and J. HOWARD COMPTON, under the name of Larrick & Compton, Architects and Engineers, have opened an office at 816½ Mass. St., Lawrence, Kansas.

HERBERT SLEACO, ARCHITECT, has opened an office at 108 Union Bank Building, Ottawa, Canada, for the general practice of architecture and town planning.

DANIEL M. LYONS, Southwick, Idaho, third year architectural student, wishes financial backing to be paid off after graduation by work. Good terms are worked out.

PHILIP SCOTT TYRE, ARCHITECT AND ENGINEER, has removed his offices from 1520 Locust Street to 2200 Architects' Bldg., Philadelphia, Pa.

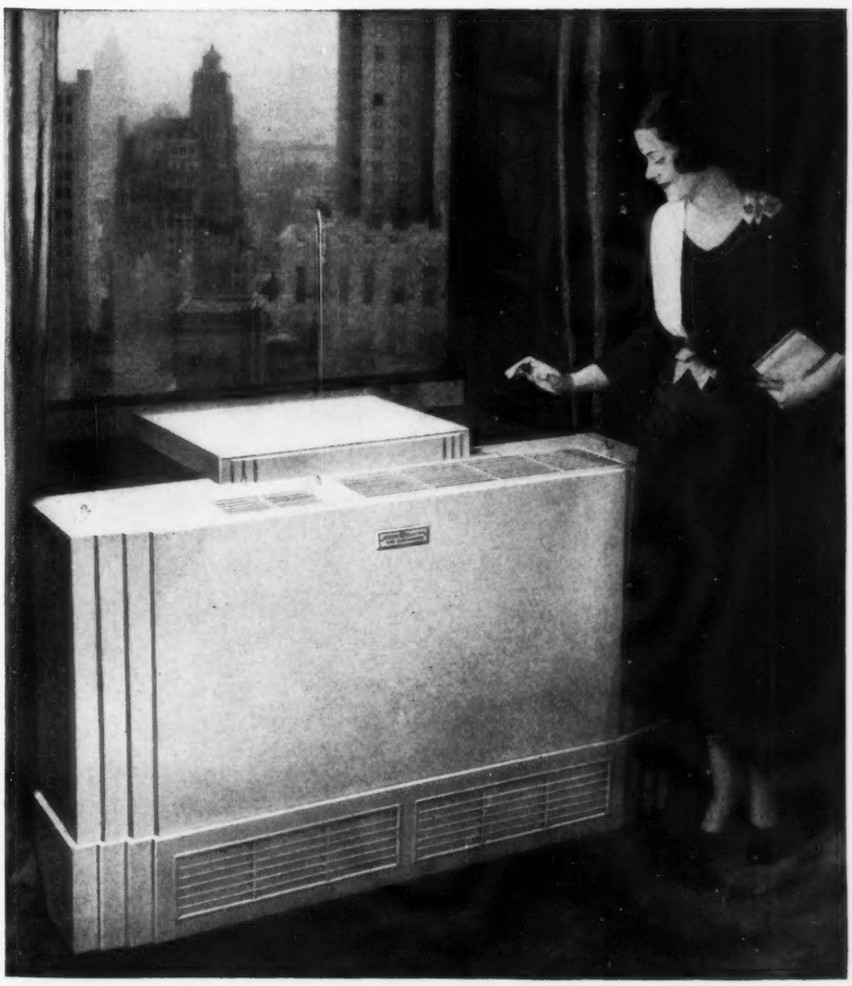
(Continued on page 26)

EMPLOYMENT SERVICE ITEMS WILL BE FOUND ON PAGE 24, ADVERTISING SECTION

COOLING *plus..*

complete, year-round air conditioning

General Electric announces newly developed equipment for single rooms, offices, stores—built-in and portable models—easily and quickly installed



GENERAL ELECTRIC has perfected air conditioning equipment that is installed quickly without alterations, costs little to operate, provides not merely cooling, but complete *year-round* air conditioning.

There are three different types of G-E Room Air Conditioners, also equipment to supply summer air conditioning to entire homes from a central plant, in connection with the G-E Air Conditioning System for Winter.

The General Electric Room Air Conditioner (illustrated at right) cools, de-humidifies, heats, humidifies, circulates, filters the air in the room. In addition it provides ventilation from outside, and has Maxim silencer to eliminate outdoor noises. It uses present boiler to supply steam, vapor or hot water for heating in winter. Available with either integral or remote condensing unit.

The General Electric Portable Room Cooler. This model may be moved from room to room on its rubber-tired wheels. Provides cooling, de-humidifying, circulation of the air.

The General Electric Room Cooler. Has the same features as the Portable Room Cooler, except that it is a fixed installation with remote compressor. Units may be used in multiple with one or more compressors. This Cooler comes in either wall or floor-mounted models. They are particularly adapted for use in living rooms, apartments, private offices and small stores.

This equipment will be installed by authorized General Electric dealers, under supervision of factory-trained engineers, in cooperation with architects. Let us send you folder supplying complete details and dimensions. Air Conditioning Department, General Electric Company, 120 B'way, New York, N. Y.

GENERAL ELECTRIC AIR CONDITIONING

Oil Furnace, Air Conditioning for Winter, Summer and All Year

Publications on Materials & Equipment

Of Interest to Architects, Draftsmen and Specification Writers

Publications mentioned here will be sent free unless otherwise noted, upon request, to readers of PENCIL POINTS *by the firm issuing them. When writing for these items please mention* PENCIL POINTS.

New Kiesling "All-Steel" Elevator Cable Equalizer.—A.I.A. File No. 32-i. Bulletin with elevation drawings and descriptive information covering a new type of elevator cable equalizer. 4 pp. 8½ x 11. John W. Kiesling & Son, Inc., 1797 Atlantic Ave., Brooklyn, N. Y.

Published by the same firm, "Kiesling Dumbwaiters, Doors, Residence and Freight Elevators." A.I.A. File Nos. 36-c-1, d-2, 33-b-33 and 33-c-4. Folder with descriptive, engineering and specification data on a line of steel-rail dumbwaiters, undercounter dumbwaiters, bi-parting dumbwaiter doors, residence elevators and freight elevators. 4 pp. 8½ x 11.

Edco Spee-Dee Lettering Device.—Folder illustrating and describing a new lettering device which permits standardization of lettering on drawings to definite sizes and styles. Eugene Dietzgen Co., 2425 Sheffield Ave., Chicago, Ill.

Concrete Floors.—Set of two new folders entitled "Concrete Floors for Industrial Buildings" and "Concrete Floors—How to Build Them," discusses cost, durability, cleanliness, safety and maintenance, and fully explains correct construction methods. A working "Specification for Bonded Concrete Floor Finish," has also been published and a 24-page book "Concrete Floor Finishes," first issued in 1929, has been revised and reprinted. Portland Cement Assn., 33 West Grand Ave., Chicago, Ill.

Cellized Wood Block Floor Data Sheets.—A.I.A. File No. 19-e-92. Useful collection of data sheets dealing with the subject of Cellized unit block construction. Descriptive, specification and installation data, basic designs for floors, dimension tables, tests, drawings of old and new methods of wood floor construction on concrete slabs. 26 pp. 8½ x 11. Cellized Oak Flooring, Inc., Memphis, Tenn.

New Celestialite Lighting Globe.—Bulletin describing a new patented lighting globe, made of Celestialite glass, especially adaptable for schools, hospitals, stores and offices. Gleason-Tiebout Glass Co., Celestialite Div., 200 Fifth Ave., New York, N. Y.

Veos Sinks.—New catalog introducing and describing the President line of vitreous enameled steel sinks. Dimension data, illustrations. 12 pp. 8½ x 11. The Youngstown Pressed Steel Co., Warren, Ohio.

Specifications for the Surface Treatment, Protection and Maintenance of Architectural Aluminum.—A.I.A. File No. 15-j. New publication dealing with the unusual and effective finishes obtainable in architectural aluminum, and giving information pertaining to their production, protection and maintenance. Useful reference manual on the subject. 8 pp. 8½ x 11. The Skybryte Company, Cleveland, O.

Newman Bar and Hotel Metal Fixtures.—Folder showing a line of railings and other metal fixtures for use in bars, hotels, restaurants, cafeterias and clubs. Newman Brothers, Inc., 416 Elm St., Cincinnati, O.

Studies in Brickwork.—A.I.A. File No. 3-f-2. Handsome new brochure, second in series, deals with the installation of Metropolitan architectural face brick in the Church of St. Catherine of Sienna, New York. Descriptive data, plate illustrations, drawings. 8 pp. 8½ x 11. The Metropolitan Paving Brick Co., Canton, Ohio.

Interiors That Speak of Charm and Comfort.—Attractive new brochure, devoted to the subject of Celotex, presents numerous suggestions for wall and ceiling patterns, designs and treatments of this insulating material. Illustrations show a wide variety of applications in residences, schools, churches and public buildings. Application instructions. 24 pp. 8½ x 11. The Celotex Co., 919 North Michigan Ave., Chicago, Ill.

Bommer Spring Hinge Catalog.—Catalog No. 55, just issued, shows the new line of Bommer checking floor hinges as well as their regular lines of spring hinges, floor spring hinges and lavatory stall hardware. A comprehensive and practical publication replete with information of value to all interested in builders' hardware. Bommer Spring Hinge Co., 251 Classon Ave., Brooklyn, N. Y.

The Lewis Humitrol.—Descriptive and specification data sheet covering the new, open contact Humitrol designed for use with transformer in low voltage air conditioning control systems up to 25 volts. Wiring diagrams. 8½ x 11. Lewis Air Conditioners, Inc., 829 Second Ave., S., Minneapolis, Minn.

Gorton Surevent Equalizing Valves and Air Eliminators.—A.I.A. File No. 30-c-24. Bulletin No. 98, just off the press, explains the operation of a line of equalizing valves and air eliminators, designed to control the flow of steam to the radiators by a special method of venting in any steam or vapor system. 4 pp. 8½ x 11. Gorton Heating Corporation, Cranford, N. J.

The New Story of Ancient Wrought Iron.—New publication describing with words and pictures the modern methods employed by the company in the manufacture of fine wrought iron. 16 pp. A. M. Byers Company, Clark Bldg., Pittsburgh, Pa.

The Cantilever Double-Hung Window.—A.I.A. File No. 16-e. Folder with construction details and descriptive data covering a ball-bearing, double-hung cantilever steel window. 4 pp. 8½ x 11. Trussbilt, Inc., 2575 Como Ave., W., St. Paul, Minn.

Holland Air-Conditioning for the Home.—Useful reference manual giving detailed description of the construction and operation of the Holland air-conditioning unit, and its application to warm air, steam and hot water heating systems. Specifications. 12 pp. 8½ x 11. Holland Furnace Co., Air-Conditioning Division, Holland, Mich.

Vimlite Flexible Health Glass.—A.I.A. File No. 26-a-92. Architects' reference bulletin, just issued, presents complete descriptive and specification data covering a type of flexible health glass suitable for use in greenhouses, conservatories, sun-porches and solariums. Construction details. 8 pp. 8½ x 11. Vitalite Co., 500 Fifth Ave., New York, N. Y.

Eagle Home Insulation.—New booklet explaining the advantages and method of installing Eagle bats, a form of insulating material for homes and applied between wall studdings and between joists in the attic. Eagle-Picher Lead Co., Cincinnati, Ohio.

Insulite Specifications and Details.—A.I.A. File No. 37-a-1. New edition of standard specification book giving complete data, specifications and details on the use and installation of Insulite lath, sheathing, exterior finish, interior finish, tile, fireproofed board, termite board, acoustile and for sound deadening. 12 pp. 8½ x 11. The Insulite Co., Builders Exchange, Minneapolis, Minn.

Kol-Master Automatic Coal Burner.—Series of descriptive folders covering a line of automatic coal burners suitable for use in residences and other types of buildings both small and large. 8½ x 11. Paragon Kol-Master Corporation, Oregon, Ill.

Ilg-Spot-Kooler.—New bulletin briefly describing a completely self-contained mechanical cooler, which can be operated from light circuit and a water supply, suitable for installation in private offices, small stores, homes, etc. Ilg Electric Ventilating Co., 2850 No. Crawford Ave., Chicago, Ill.

Published by the same firm, "The Ilg-Kold Electric Cooling System." Folder showing typical installations of Ilg-Kold units in residences, offices, stores, restaurants, etc.

Air-Lec Automatic Garage Door Operator.—Illustrated bulletin explaining the features of a line of automatic door operators for opening and closing garage doors of all types and sizes. 4 pp. 8½ x 11. Schoelkopf Mfg. Co., Madison, Wis.

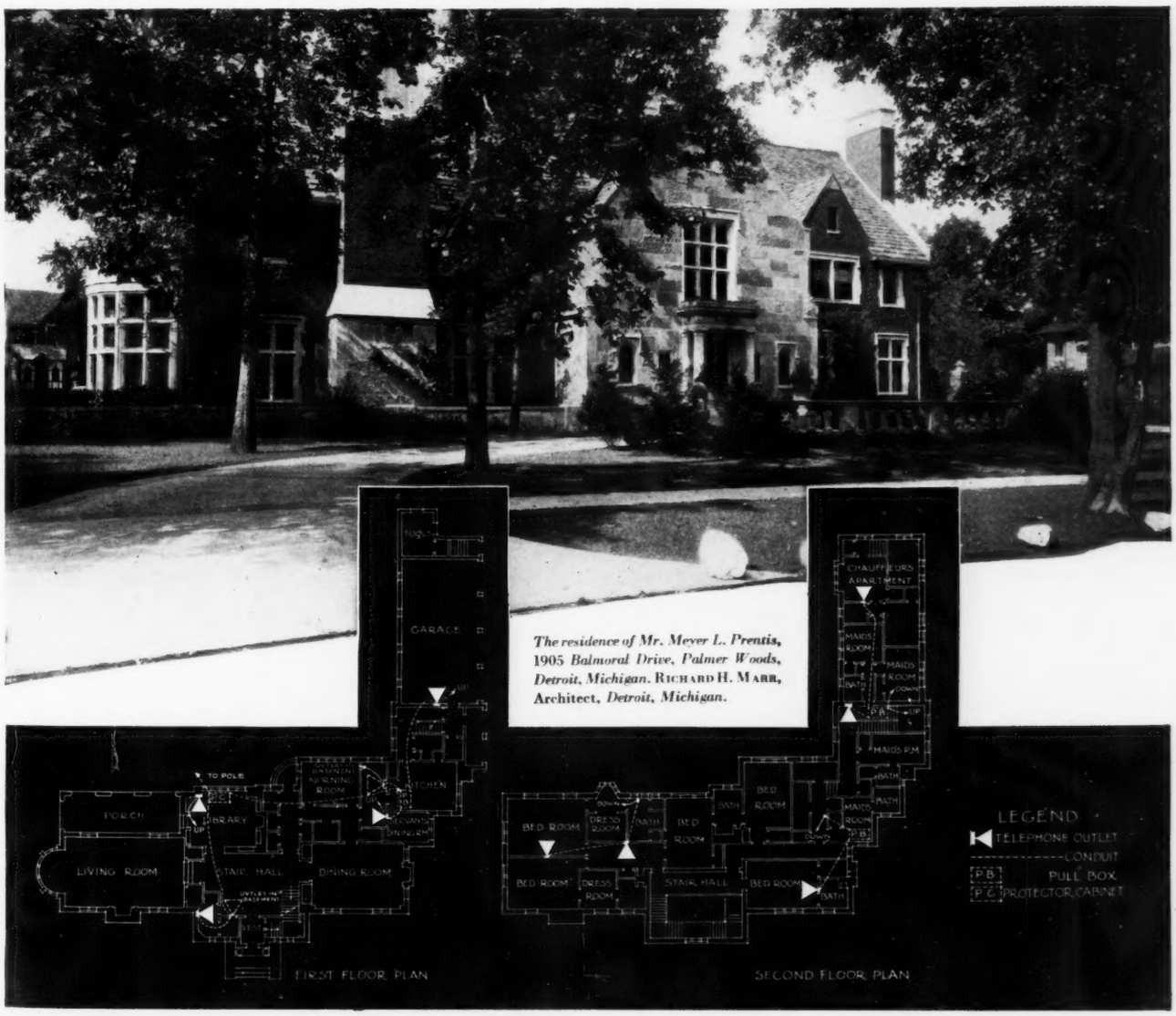
Grinnell Humitherm System.—Folder with drawings and detailed description covering a complete air conditioning system of a special type and size designed especially for replacement of present hot air furnace using the existing duct system. 6 pp. 8½ x 11. Grinnell Company, Providence, R. I.

Colferro Colored Portland Cement.—New publication with series of color plates dealing with the subject of Colferro, a colored rapid-hardening portland cement which gives to concrete and mortar pleasant color effects that harmonize with almost any color scheme. Application instructions. 8 pp. Ferrocrete Cement Co., Inc., 370 Lexington Ave., New York, N. Y.

Published by the same firm, "Retardo." Descriptive folder covering a specially prepared powder which provides a key for bonding or exposing aggregates on concrete. Instructions for use of material are included. 4 pp.

Bar-Z Partitions.—A.I.A. File No. 20-b-14. Useful reference guide for architects and draftsmen describing an entirely new and simplified method of building lightweight fire-safe partitions to meet the modern demand for steel frame construction at low cost. Construction details, specification data. 18 pp. 8½ x 11. The Consolidated Expanded Metal Companies, Wheeling, W. Va.

THE TELEPHONE COMPANY HELPED PLAN THIS HOUSE



The residence of Mr. Meyer L. Prentis, 1905 Balmoral Drive, Palmer Woods, Detroit, Michigan. RICHARD H. MARR, Architect, *Detroit, Michigan.*

THE telephone arrangements for this distinctive Detroit residence were carefully worked out in advance, with the help of the local telephone company. Outlets were located at eleven strategic, step-saving points throughout the house and the necessary conduit included in walls and floors during construction. All eleven stations are linked by a Bell 750-A dial intercommunicating system, and there are two central office trunk lines.

Intercommunication makes it possible to talk from room to room, or to the outside world, over the same instrument, with equal ease. The household runs more smoothly—with less waste of time and energy. The number of outlets installed takes care of present needs, anticipates future requirements and provides a flexible convenience for which the owner is very naturally grateful to the architect.

Such pre-planning makes for economy and efficient service. Telephone engineers are always ready to assist you, without charge. Just call the Business Office and ask for "Architects' and Builders' Service."

BELL SYSTEM
AMERICAN TELEPHONE & TELEGRAPH CO. AND ASSOCIATED COMPANIES

A Free Employment Service for Readers of Pencil Points

Replies to box numbers should be addressed care of PENCIL POINTS, 330 West 42nd Street, New York, N. Y.

Position Wanted: I am twenty-three years old and married. Have had seven years' drafting and designing experience. Last employed by one of the largest architectural offices in the south. Location immaterial. Salary to meet expenses. College graduate with good working knowledge of period architecture. Experienced in structural as well as architectural lines. Excellent references. Clifford J. Lane, 2015 North Billen Street, Oklahoma City, Okla.

Position Wanted: Stenographer-secretary, 2 years' experience in engineering and construction and 2 years' in advertising agency. One year of college. Desires opportunity with architectural organization or with publication in this field. Mildred A. Coates, 3304 Archwood Avenue, Cleveland, Ohio.

Position Wanted: Graduate of the University of Pennsylvania, drafting experience, stenographer, willing to work with architect desiring to "drum up" alteration jobs in and about New York City. Rudolph S. Hofer, Jr., 366 Ridgewood Avenue, Brooklyn, N. Y.

Wanted: First-class pen-and-ink artist to collaborate on book. Can work at home during spare time with payment in future royalties on agreed basis. Harold Haag, Box 243, Elyria, Ohio.

Position Wanted: Young man, 20, would like to earn living expense while attending World's Fair. Desires position in architectural or contractor's office. Has completed courses in architectural drafting and building, with Architectural Chicago Technical College, Home Study Department. Architecture chosen profession. Robert Walter, 574 East 7th Street, Spencer, Iowa.

Position Wanted: Young man, 27 years old, married, six years' experience as draftsman on renting plans, diagrams, etc., wishes to work without pay for an opportunity to be fitted for a position where present experience will be an asset. Specially interested in constructed lettering. C. A. Lambert, 3135 Broadway, New York City.

Position Wanted: Junior draftsman, has had practical experience. Graduate of Vocational High School and completed third year at Cooper Union Night School. Can furnish best references and willing to start from the bottom. Domenic Ditrano, 325 East 120th Street, New York City.

Position Wanted: Architectural draftsman, 12 years' experience. Sketches, working drawings, scale and full size details. Capable of making plumbing, heating, structural steel and reinforced concrete plans and details. Capable of handling correspondence and field supervision. Married, reliable worker. Salary reasonable. Stephen M. Bednar, 313 Munson Avenue, McKees Rocks, Pa.

Position Wanted: Ten years' experience, seven and one-half in good architectural offices, one-half year in stone plant, two years with contractor. Worked on all types of structures, domestic, commercial, industrial and public buildings (including Post Office, Columbus, Ohio). Can contact clients, make perspectives, do some structural engineering, surveying, remodelling, and make neat, concise, working drawings. Interested in any job anywhere with a salary. Malcolm T. Meek, R. R. No. 6, Eagle Road, Fort Wayne, Indiana.

Position Wanted: Secretary - stenographer - bookkeeper. Many years' experience in builder's and general hardware, architecture and construction work. Familiar with all materials entering into same. Executive ability and thorough in typing specifications. Will consider any location. A-1 references. L. McLeod, Box 336, Monroe, Louisiana.

Position Wanted: Junior draftsman. Would like position with architect or landscape architect. Small salary to start with but my desire is to gain experience and good training. Harold F. Adelsohn, 1177 West 25th Street, Los Angeles, Calif.

Position Wanted: Junior draftsman would like position in architect's or engineer's office. Twenty years of age. Just graduated from Pratt Evening School of Architecture and Construction. Expect to continue studies at Pratt for three years more. Previously studied architecture, for two and one-half years, in Curtis High School on Staten Island. Will take any salary. Just finished work in shipyards of the United Dry Docks, Inc., on Staten Island. E. H. Evenson, 181 Lexington Ave., Port Richmond, N. Y.

Position Wanted: Sales engineer, 10 years' experience quality building products including roofing, sheet metal and cement. Accurate estimator, familiar with architect, contractor and dealer contacts. Can travel or locate anywhere. Age 31, married. Excellent sales record. Open to represent any accepted building material or service on a salary or drawing account basis. Gordon J. Hall, 5400 Charles Street, Philadelphia, Pa.

Position Wanted: Young man, 24 years old, graduated from Architecture and Civil Engineering at the University of Minnesota. Willing to go anywhere and to start from the bottom on a reasonable salary. Have good personal references, though very limited experience. Desirous of connection with either an architectural, engineering or building firm. Box No. 600, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, long experience on all kinds of work. Landscaping, design. Able to take charge of office or jobs from beginning to the end. 40 years old, of good personal habits, married. Go anywhere. Box No. 601, care of PENCIL POINTS.

Position Wanted: Draftsman-designer, 30 years old, single, college and private education in architecture, over 7 years' office experience on commercial and domestic projects. Can prepare sketches, presentation drawings and models in addition to working drawings and details. Also residential specifications and supervision. Permanent connection in any location with sufficient salary to cover expenses. Box No. 602, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, experienced on small residences, also schools, hospitals and commercial type of buildings. Snappy presentation drawings that land the business. Fast worker on sketches and finished drawings. Moderate compensation. Fine credentials and specimen of work can be had upon request. Box No. 603, care of PENCIL POINTS.

Position Wanted: Landscape architect, 15 years' experience and 6 years of independent practice, finds almost all of his work temporarily suspended. With a clientele in some of the most notable residential colonies of the East doing nothing, he would like to find employment full time, part time, temporary or perhaps permanent, with a landscape architect or an architect. Would be valuable to an architect who has occasion to do his own landscape designing, or to a landscape architect who needs help conversant with every phase of this profession. Should a permanent connection become feasible, some equitable arrangement could be made for future care of present clientele. Box No. 604, care of PENCIL POINTS.

Position Wanted: Structural engineer, wants contact requiring small investment. Prefer architect, engineer or construction company. Age 34. Box No. 605, care of PENCIL POINTS.

Representative Available: Architect with sales experience desires to represent reputable manufacturer in vicinity of Washington, D. C., government representative on sales promotional work especially; salary or commission with drawing account. Box No. 606, care of PENCIL POINTS.

Position Wanted: Architectural draftsman with engineering, superintending experience. Graduate. 18 years high-grade building construction covering all types building throughout the United States. Specification writing, contracts, awards. Executive ability. Location immaterial. Salary secondary. Unemployed long time. Married. Best references. Box No. 607, care of PENCIL POINTS.

Position Wanted: Architectural designer and delineator. Long experience in prominent offices of the east. Especially qualified by training and ability for work requiring imagination and originality. Will make any concession on competition work. Graduate of an accredited school. Efficient on construction drawings, details, etc. Salary easily arranged. No preference in locality. Box No. 608, care of PENCIL POINTS.

Position Wanted: Superintendent. Married, age 35, 16 years' experience on all types of building construction. Last 10 years spent in supervising work for contractors, architects and owners. Graduate of architectural and technical schools. Registered architect and engineer. Interested in anything within scope of my training and experience. Open on salary and location. Box No. 609, care of PENCIL POINTS.

Position Wanted: Superintendent, engineer, draftsman. Graduate. 18 years' experience. High grade construction all sections United States. Leading chain store experience, designing, superintending. Aggressive, steady, reliable. Location immaterial. Best references. Box No. 610, care of PENCIL POINTS.

Partner Wanted: I desire to get in touch with an established architect who would be interested in sharing business with a progressive young man who has experience in south and far west as draftsman and inspector of construction work. I can use typewriter and handle office work as well as make neat and accurate scale and full size drawings and could write specifications if necessary. Box No. 611, care of PENCIL POINTS.

GILLOTT PENS

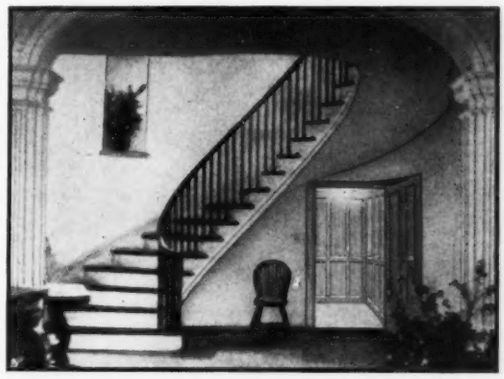
The Entrance Porch of Lincoln's Inn, London, drawn by Harry C. Wilkinson of Old Greenwich, Conn., with Gillott Pens 290 and 303.

Ever since the steel pen was invented by Joseph Gillott, over one hundred years ago, the name "Gillott" has been synonymous with the word "quality" in the minds of leading artists and architects.

At leading dealers—or send 24c in stamps for a sample set of Gillott Drawing Pens, six popular points.

JOSEPH GILLOTT & SONS, Ltd.
93 Chambers Street, New York

KIESLING RESIDENCE ELEVATOR



A modern convenience offering comfort and safety to any member of the family who finds stair climbing arduous. Installation is inexpensive—costs nothing to operate. From $450 up.

REPRESENTED IN ALL PRINCIPAL CITIES OF U. S.

Manufacturers of Dumbwaiters, Elevators and Cable Equalizers

JOHN W. KIESLING AND SON, INC.
1797-1801 Atlantic Avenue, Brooklyn, N. Y.

WELL BALANCED

Easily Adjusted

Like a well-made compass or dividers, the Koh-I-Noor Artists' Pencil (No. 1511) has the feel of a craftsman's implement. Artists, Architects, Engineers and Draughtsmen find its balance perfect . . . its ease of adjustment highly advantageous. Leads available in 17 degrees, 6B to 9H. Koh-I-Noor Pencil Co., Inc., 373 4th Avenue, New York, N. Y.

KOH-I-NOOR
The Perfect Pencil

HIGGINS' INK HINTS

A SERIES BY A. L. Gillott

»»unique! fascinating!

Scratch board!

Scratch Pen Drawing

A COMBINATION OF BRUSH STROKES AND SCRATCHES

SKETCH AND RENDER ON SCRATCH BOARD! You need only a sheet of Scratch board and your bottle of HIGGINS' WATERPROOF DRAWING INK••• Apply ink to the board with brush or pen, all over or merely for the darks, like this— . Then scratch these darkened areas with some pointed instrument (a knife is good) like this— or this— or this— . Experiment for yourself••• It's a wonderful medium! Easy to obtain correct values; easy to develop textures; easy to make changes! Ideal for woodcut imitations! And when you work with HIGGINS' COLORED INKS on scratch board you are sure to wax enthusiastic! It's great fun!••• We'll gladly mail you more detailed instruction on this technique. It's yours for the asking!

WHY NOT LET US PLACE YOUR NAME ON OUR MAILING LIST FOR ADDITIONAL DRAWINGS OF THIS SERIES?

CHAS. M. HIGGINS & CO., INC.
271 NINTH STREET, BROOKLYN, N.Y.

MODERN AIR CONDITIONING, 1

(Continued from page 288, Editorial Section)

rately ascertained by experiment. Part of this heat is in the form of moisture and the balance is called sensible heat and goes to heat the surrounding air. This sensible heat varies with the dry bulb temperature, being about 330 Btu. at 65° F., 300 Btu. at 70° F., 260 Btu. at 75° F., 210 Btu. at 80° F., 160 Btu. at 80° F., and 140 Btu. at 87° F. This plainly indicates that as the temperature rises the body is able to dispose of less heat by radiation but compensates for this by increased perspiration so that the total heat lost remains practically constant. The latent heat of evaporation and perspiration may be obtained by subtracting the sensible heat radiated from the total heat lost from the body, or 400 Btu. per hour. The designer of cooling systems is seldom troubled with room temperatures outside of the ranges above quoted so that extreme conditions may be neglected in all ordinary use.

Air Quantity

The amount of air required is no longer a function of the number of persons to be cared for or the number of air changes in the room to be conditioned. Instead, it has become a factor which is determined by the amount of heat to be carried off from the room and the number of degrees below the room temperature at which the air can be injected without creating objectionable draughts. For example, if the air enters the room at 15° F. below the room temperature, in heating up to the room temperature in the room it will pick up 15/55 of a Btu. per cubic foot or a trifle over ¼ Btu. so that about 4 c.f.m. of air will absorb 1 Btu. per minute. This is equivalent to saying that 1 c.f.m. will absorb 15 Btu. per hour. Should the entering temperature of the air be kept only 10° F. below the room temperature, the amount of heat absorbed per c.f.m. circulated will drop to about 10 Btu. per hour. In theaters the air quantity usually is found to range from 20 to 30 c.f.m. per occupant when all heat sources are considered and the building is kept from 10° to 15° F. below the outside temperature.

In general cooling, as in office buildings, stores, etc., where the congestion of the theater and auditorium is not encountered, a ratio of two cubic feet per minute per square foot of floor area in most cases will approximate the quantity that more accurate figures will finally determine. It should be remembered that there are two viewpoints in regard to cooling: first the holding of a temperature in the building not to exceed that of the outside and, second, the lowering of the temperature in the building to one considerably below the outside—say 10° to 15° F. less. In the first case it is only necessary to remove the heat generated in the building by persons, electric lighting or power, cooking, etc., but in the second case not only must all of the heat in the first case be taken care of but the additional heat entering the building through the walls, windows, doors, leakage and by every other means must be absorbed by the cooling air supplied. The use by the architect of double windows and insulated walls in buildings to be cooled will result in a great saving on the first cost and operation of cooling systems. When only certain portions of a building are to be cooled, floors, ceilings and partitions between the cooled sections and the uncooled portions should be insulated, if possible.

PERSONALS

(Continued from page 20)

Goodman & Shulman, Architects, have moved from 20 Smith St. to 216 Market St., Paterson, N. J.

Engineering Services is the name of a newly formed organization, with offices at 242 Norway Street, Berlin, N. H. The service includes structural, mechanical and architectural designs, aerial photography, map copying and blueprinting.

MANUFACTURERS' DATA WANTED

Requests for manufacturers' literature have been received from the following:

Yuan-Hsi Kuo, Architect and architectural advisor for Chinese exhibitors, and Chinese commissioner of The International Exposition, 133 South William Street, Westmont, Ill. (also A.I.A. material).

Larrick & Compton, Architects, 816½ Mass. Street, Lawrence, Kansas.

Meri L. Padgett, Architect, Kellogg Lumber Co., Inc., Monroe, La.

Martin C. Parker, Architect, 206 E. 4th Street, Long Beach, Calif.

Clifford J. Lane, Architect, 2015 North Billen, Oklahoma City, Okla.

Roland A. Yaeger, Architect, 85 Palmerston Road, Rochester, New York.

Bart White, draftsman, Lenoir City, Tenn.

Karl Aurelius, draftsman, 1729 East Minnehaha, St. Paul, Minn.

P. Antony Colicci, draftsman, 335 Broadway, Providence, R. I. (for A.I.A. file).

Miss Lillian Handelsman, draftsman, 902 Liberty Avenue, Brooklyn, N. Y.

Roland M. Purdy, draftsman, Cato, New York (for A.I.A. file).

Sidney D. Jarvis, draftsman, 1104 No. Marshall Street, Milwaukee, Wis. (for A.I.A. file).

Willard D. Rand, Jr., student, M.I.T. Dorms., Cambridge, Mass.

Thomas Sette, student, 3739 95th St., Jackson Heights, L. I., N. Y.

W. A. McCarty, student, Box 672, Gainesville, Fla.

Alvah W. Swain, student, Durham, N. H.

Fred Roughgarden, architectural graduate, 28 Rosalie St., Warren Point, N. J.

St. Paul School, Dept. of Architecture, Lawrenceville, Va. (for A.I.A. file).

The Architectural Research Group, 1615 Spruce Street, Philadelphia, Pa.

Karl Philips, Inc., Architectural Dept., 53 East 25th Street, New York, N. Y. (catalogs on building and decorative materials).

Engineering Services, 242 Norway Street, Berlin, N. H.

Henry Miller, student, 274 So. 2nd Street, Brooklyn, N. Y.

Daniel M. Lyons, student, Southwick, Idaho.

W. F. Waldeck, Architect, 299 Scheiding St., Pretoria, South Africa.

At St. Meinrad's Abbey

These dish tables and washers in the kitchen of St. Meinrad's Abbey are made entirely of Monel Metal. They are part of the equipment installed by the JOHN VAN RANGE COMPANY, Cincinnati.

This view shows Monel Metal cook's tables and warmers, continuous canopy, cereal cooker and deep fat fryers on the right, and Monel Metal work table on left. JOHN VAN RANGE COMPANY installed this equipment. Crowe & Schulte, Cincinnati, were the architects for St. Meinrad's Abbey.

...*Ready to serve* 1800 *meals a day, for many years to come!*

Good as these pictures are, no illustration could do full justice to the splendid kitchen of St. Meinrad's Abbey, St. Meinrad, Ind. It's a masterpiece of skillful planning and time-saving equipment. Everything literally shines with silvery beauty and inviting cleanliness. Everywhere you look, lustrous surfaces of Monel Metal stand guard against rust, corrosion and wear!

Much credit for the fine appearance and efficiency of this kitchen is due the John Van Range Company whose engineers have drawn on their years of experience in planning outstanding Monel Metal installations for hotels, restaurants and other large institutions. With the aid of Monel Metal, these experts have created a food service department where 1,800 appetizing meals can be prepared daily under the most sanitary conditions, with a minimum of time, labor and cleaning expense.

Moreover, this equipment is built to last . . . made of Monel Metal to give years and years of low-cost service. It will never rust. It will never chip. It will never lose its bright, modern appearance . . . for it has the enduring strength of steel, with no coating to chip off or wear away.

If your files do not contain recent information about Monel Metal food service equipment, drop us a line and we'll send you the latest literature.

Monel Metal

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

INCO MONEL METAL

ADDRESSES WANTED

Anyone knowing the correct addresses of the following will confer a favor by sending them to this office, THE PENCIL POINTS PRESS, Inc. 330 West 42nd Street, New York.

CALIFORNIA: *Hollywood*; Julian Boone-Fleming. *Los Angeles*; Lucretia M. Foster, J. C. Griffis, Harry McAfee, Horace G. Thursby.

DISTRICT OF COLUMBIA: *Washington*; Bernard Olson.

GEORGIA: *Atlanta*; Jules Gray.

ILLINOIS: *Champaign*; Joe Stein. *Chicago*; Sidney C. W. Anderson, F. Clare Hinkley, Pete Jarnowski. *Oak Park*; Eugene W. Chin.

IOWA: *Des Moines*; Alex Linn.

MASSACHUSETTS: *Boston*; Lillian G. Allen, Charles G. Martin. *Cambridge*; Florence Smith. *Brookline*; Henry K. Crowell, Jr. *Webster*; Chester C. Corbin.

MICHIGAN: *Ann Arbor*; C. L. T. Gabler. *Detroit*; Kotting & Stanton, Inc. *Grand Rapids*; John Samuelson. *Saginaw*; George A. Stutzer.

MINNESOTA: *Duluth*; W. C. Agnew.

MISSOURI: *Columbia*; Harold E. Sutton.

NEW HAMPSHIRE: *Durham*; Wendell E. Anderson.

NEW JERSEY: *Freeville*; M. J. Freeborn. *Jersey City*; Francis Sullivan. *Newark*; Reuben B. Azherderian. *New Brunswick*; Raymond O. Peck.

NEW YORK: *Brooklyn*; Morris Jackson, George E. Showers. *Ithaca*; Edwin H. Cordes. *Long Island City*; R. Rollette Duckering. *New Brighton*; C. W. D. Stillwell. *New York*; Russell P. Bullinger, Jennie Chen, Wm. J. Elberth, DeWitt H. Fessenden, W. F. Marshall III, Oscar J. Ogg, Paris & Wiley, Stevens Master Specifications, T. S. Thom. *Ridgewood*; F. Wielonski. *Rockaway Beach*; Wm. Levy. *White Plains*; E. J. Hoffman. *Woodland Terrace*; A. S. Mongiello.

OHIO: *Cincinnati*; J. L. Boettner. *Cleveland*; Dorothy A. Deaver. *Wickliffe*; Mrs. Arthur H. Day.

OREGON: *Eugene*; Leslie Van Doren. *Portland*; R. G. Clifford.

PENNSYLVANIA: *Elkins Park*; Henry E. Johnson, Jr. *Pittsburgh*; Williard S. Lawrence, Donald Nicholas.

TEXAS: *Houston*; Thomas B. Donald.

VERMONT: *Burlington*; Vernon W. Houghton.

WASHINGTON: *Winslow*; E. G. W. Morris.

CANADA: *Quebec*; J. Colonnier.

CHINA: *Shanghai*; Chiun Tung.

ENGLAND: *Guiseley, Leeds*; Arthur D. Craven.

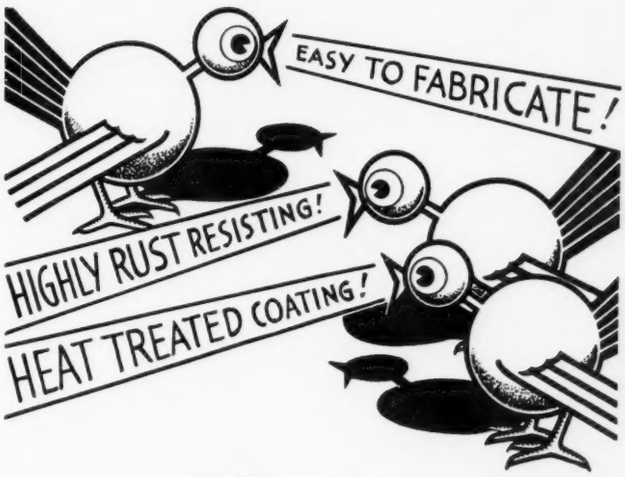
BEAUX-ARTS INSTITUTE OF DESIGN
304 East 44th Street, New York, N. Y.
Nominal Fee for Instruction in
ARCHITECTURAL DESIGN, SCULPTURE, INTERIOR DECORATION, MURAL PAINTING COMPOSITION
In cooperation with other educational institutions
COURSES IN SCULPTURE IN ALL ITS BRANCHES AT THE INSTITUTE
Instruction founded on the principles of the Ecole des Beaux-Arts of Paris
Circular on Application

SUMMER COURSE
ARCHITECTURE
Six weeks' course, beginning June 19 and ending July 28, in Design, Rendering, and Water Color. For catalog, address Director of Summer Session.
CARNEGIE
INSTITUTE OF TECHNOLOGY
PITTSBURGH, PENNSYLVANIA

PENCIL POINTS
PRINTED BY
The Gillespie Bros., Inc.
THE GILLESPIE BROS INC STAMFORD CONN
STAMFORD, CONN.
Magazines, Catalogues, Monographs,
Books, Annuals and all forms of
HIGH GRADE PRINTING

PERSPECTIVE PROJECTION
By Ernest Irving Freese
$1.50
This book presents a new and thoroughly tested method for making perspective drawings without the use of a vanishing point. It is based on sound principles and has been used for many years by the author.
CONTENTS
Straight Line Figures; Curved Line Figures; Expedients; Enlargements and Reductions; Domes, Foregrounds, and Interiors; The Author's Drafting Room Method; Supplemental Illustrations.
THE PENCIL POINTS PRESS, INC.
330 West 42nd Street New York, N. Y.

EXAMINATIONS FOR REGISTRATION
of architects contain some work in Structural Engineering. For many candidates this is the most difficult subject. We have now prepared a new course of Home Study (by Mail Only) in
ARCHITECTURAL ENGINEERING
designed to supply a practical training in all the essentials of Structural Engineering which would be required in any ordinary examination for registered Architect. Send for literature TODAY.
WILSON ENGINEERING CORPORATION
College House Offices Harvard Square
Cambridge, Massachusetts, U. S. A.



These qualities plus other features are all present . . .

In This Steel Sheet

Superior Galvannealed steel sheets are an *improved material* for use under difficult and exacting conditions. It is the ideal sheet where exposure to weather is involved, where corrosion producing conditions are present, because of its unusual resistance to rust. The hot dip zinc coating is actually *bonded* to the base metal by a heat treating process.

Superior Galvannealed is finding an ever increasing market for use in humidification and ventilating systems, fire doors, hollow metal sash and frames, portable shower baths, toilet partitions, ventilators, cabinets and many other types of sheet metal work.

We shall be glad to submit a standard sample and detailed information on which to base your recommendations for Superior Galvannealed steel sheets.

- A special analysis steel sheet with a hot dip heat treated zinc coating. Highly rust-resisting.
- Coating will not chip, flake or peel under the most severe forming.
- Surface adapted to receive finish and retain it under severe conditions.

The Superior Sheet Steel Co.
Canton, Ohio
Division of Continental Steel Corporation

Superior Galvannealed
PATENTED PROCESS

"WHO HAS USED DURIRON?"

The roster of buildings in which Duriron has played an important part includes structures of all types. Here are just a few:

Times-Star Building, Cincinnati. Samuel Hannaford & Sons, architects.

Meharry Medical College, Nashville. Gordon & Kaelber, Rochester, architects.

Theodore Roosevelt Junior High School, Peoria, Ill. Hewitt, Emerson & Gregg, architects.

Jefferson County Court House, Birmingham, Ala. Holabird & Root, Chicago, and H. B. Wheelock, Birmingham, architects.

New Pennsylvania Station, Philadelphia. Graham, Anderson, Probst and White, architects.

Allegheny General Hospital, Pittsburgh. York & Sawyer, architects.

Duriron has been used because it is cheapest in the long run against attacks by acids and corrosives.

Send us your blue prints and we will make suggestions for the economical use of acid-proof Duriron drain-pipe, exhaust fans and ducts. We are specialists in the problems of corrosion and our advice is yours for the asking.

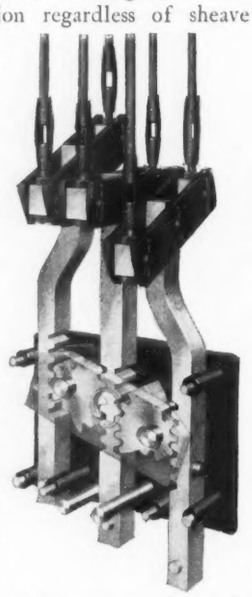
THE DURIRON COMPANY, Inc.
420 N. Findlay St. Dayton, Ohio

DURIRON
ACID PROOF
DRAIN PIPE

Announcements of New Products, Changes in Personnel, etc.

KIESLING "ALL-STEEL" ELEVATOR CABLE EQUALIZER

John W. Kiesling & Son, Inc., Brooklyn, N. Y., have recently introduced a new automatic elevator cable equalizer for use in both new and existing multiple cable elevator installations. It has an equalization range of 14 in. which insures equal cable tension regardless of sheave groove wear, stretching of cables or where the diameters of the cables are either slightly undersize or oversize. The possibility of any variation in tension is eliminated by its low friction coefficient. The Kiesling equalizer will operate under its weight and meets the requirements for not only hoist cables but also the compensating cables.

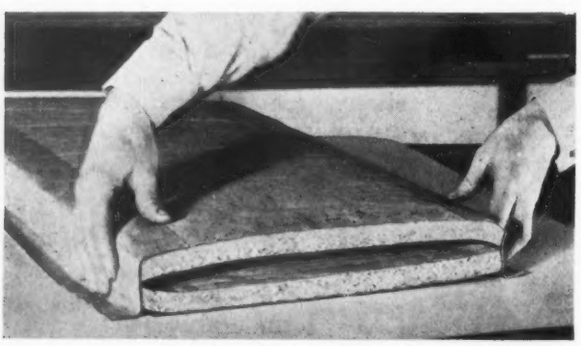


Due to uniform loading and wear on cables at all times the Kiesling equalizer increases cable life. Reduction in power costs is also made possible because the maximum cable traction is assured. It also lowers elevator maintenance as no take-up of cable slack is necessary thereby increasing cable life. Servicing is not required since no attention, adjustment or take-up is necessary.

The Kiesling equalizer is delivered fully assembled and installation simply consists of placing it in position between the car crosshead and bolting it fast to the flanges of the crosshead by means of steel bolts on the equalizer and a steel angle clip. No drilling or special fitting is required.

WALL-THICK BALSAM-WOOL

Wall-Thick Balsam-Wool, recently introduced by the Wood Conversion Co., Cloquet, Minn., is a new form of balsam-wool, the flexible blanket insulation which has become a standard building material in general use for all

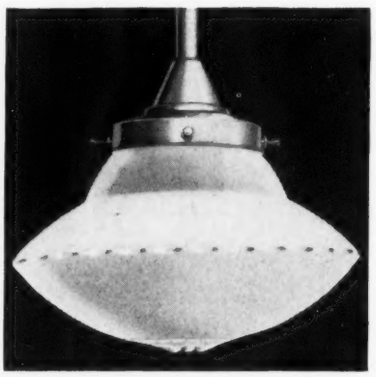


types of buildings. Wall-Thick Balsam-Wool was designed to meet the rigid requirements of air conditioning and other demands for the utmost in house insulation.

It is composed of two thick layers of balsam-wool, each encased in waterproof asphalted kraft. The edges are sealed against moisture and are flanged for quick and tight application. When installed between studdings the two layers of balsam-wool spread, forming a sealed air space between this air space and those on each side of the blanket add considerably to the heat-stopping qualities of the material itself. Wall-Thick Balsam-Wool is claimed by the makers to be proof against water, wind and air infiltration and thus a potent factor against condensation.

THE NEW CELESTIALITE LIGHTING GLOBE

Announcement is made by the Gleason-Tiebout Glass Co., Celestialite Division, New York, of the introduction of its new No. 5000 patented lighting globe which is especially adaptable for school, hospital, store and office installations.



In addition to its artistic design, the new globe offers several practical lighting advantages. There are three areas on the globe. The top portion acts as a generous light source for light thrown upwards to the ceiling, providing a large quantity of semi-indirect lighting. The lower section is a large area for light diffusion downward. The center portion acts both as a reflector to project light downward through the lower portion and also as a light source in itself, but a light source, subdued, to do away with the objectional over-bright center. A 200-watt lamp is used with the filament set 4¾ in. above the bottom of the globe.

NEW BETHLEHEM JOISTS AND STANCHION SECTIONS

The Bethlehem Steel Company has announced the addition of four new minimum weights of Bethlehem joists and one new stanchion section to the line of Bethlehem structural shapes. The four new minimum weights of joists are as follows: Section BJ12 having a depth of 12″ and weight of 14 lbs. per foot; section BJ10, 10″ x 11½ lbs. per foot; section BJ8, 8″ x 10 lbs. per foot; and section BJ6 6″ x 8½ lbs. per foot. The new stanchion is designated as BS4 and is 4″ x 4″ in weights of 7½, 10 and 13 lbs. per foot. These new sections are rolled at the Bethlehem plant, Bethlehem, Pa.

L. C. CHASE OFFERS COMPLETE LINE OF RELATED HOME FURNISHINGS

L. C. Chase & Company, Inc., 295 Fifth Avenue, New York, now offer a complete line of home furnishings styled in complete harmony in color and design. Besides their Seam Loc carpet, they now offer Velmo upholstery, flat upholstery, draperies, curtains, bedspreads, etc.

This convenience is made possible through the acquisition of the Lesher Whitman Company whose business is being absorbed by L. C. Chase & Company, Inc., and the distribution of the fabrics of the Goodall Worsted Company through the L. C. Chase organization.

A NEW TYPE OF BOILER TUBING

Steel and Tubes, Inc., Cleveland, Ohio, a subsidiary of the Republic Steel Corporation, announces the development of electric resistance weld boiler tubes, to be marketed under the trade name of Electrunite boiler tubes.

The tubing is formed from strip steel continuously, the strip being passed through a series of forming rolls. The round butted tube thus formed then passes under revolving wheel-like copper electrodes where current travels from electrode to electrode through the butted seam of the tube. At the same time, pressure is applied which, together with the heat which is below the fusion temperature and which is confined to an area no larger than a pinhead, completes the weld. The tubing is later normalized and fully tested in accordance with A.S.M.E. Specifications.

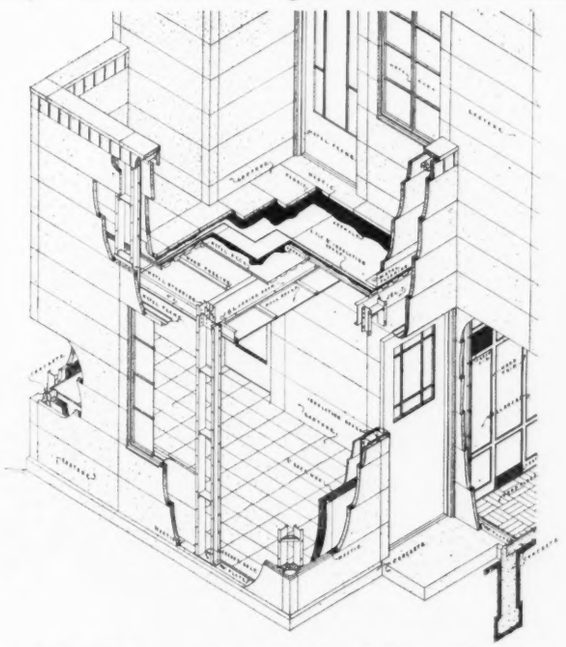
This new type of boiler tubing is available in all sizes up to 5″ O.D., in copper bearing, nickel steel and Toncan iron, as well as the usual open hearth steel.

NEW COLORED SYNTHETIC STONE

At the Century of Progress Exposition, Chicago, in the Low Cost Housing Group, there is being erected a model residence—"A House of Rostone," featuring the use of a new building material developed by Rostone, Inc., Lafayette, Ind.

The name of this new synthetic stone is Rostone. It is made from ordinary shale and alkali earths with quarry waste as a filler. The shale is first finely pulverized, then thoroughly mixed with a small proportion of alkaline earths, both in a slightly moist state. At the same time quarry waste filler and coloring matter are introduced. The material is then molded under strong pressure, then "cooked" in a steam chamber for two hours and the process is complete. No cement used. There is no binder and aggregate in the ordinary sense. During the process the shale and alkaline earths combine chemically into an entirely new stonelike substance which is said to be not only strong and durable but colorful and beautiful in appearance.

Rostone colors are almost endless in their variety, not only in flat colors but in variegated and intermediate shades



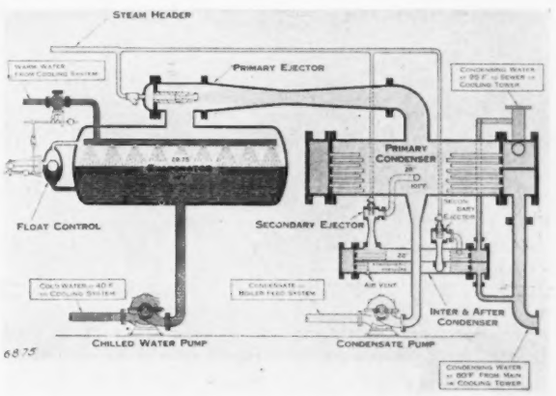
as well. The stone has a smooth, pleasing surface just as it comes from the mold, and in addition is easily textured, carved or given a lustrous finish.

This new material is dense, weighing 130 lbs. per cubic foot, and has a close uniform texture free from lamination. The crushing strength runs from 8,000 lbs. per square inch up. Absorption is low, about 8%, controllable from 5% to 12%, and the surface provides a strong natural bond with mortar. There are no inherent chemicals to cause either efflorescence or corrosion of imbedded metal parts.

The exterior walls of the model house are formed of large flat Rostone slabs attached to a steel framework. The slabs are all 4 ft. long and 17 in. high by 2 in. thick and have ship-lapped joints filled with mastic. The slabs are fastened to the steel members with bolts which screw into metal thimbles cast into the stone. Copings and decorative trim were also of Rostone similarly applied. Flat roof decks and terraces are of large Rostone slabs. Other uses in this model house include Rostone floor slabs, stair treads, interior wall panels, fireplace stonework and decorative details.

AMERICAN RADIATOR ANNOUNCES THE DECALORATOR

Among the many indoor weather manufacturing products announced by American Radiator & Standard Sanitary Corporation is a new steam vacuum refrigeration development. This will be known as a Decalorator and will be used to produce cold water for cooling. It is so designed that it can be manufactured in sizes for homes or the largest of buildings.



The Decalorator has no moving parts to get out of order, uses only water as a refrigerant, and will chill water as low as 35 degrees F. Operation is entirely automatic.

The above flow diagram shows the operation of the Decalorator. A vacuum of 29.75″ mercury is maintained in the evaporator chamber. The water to be cooled is introduced into the evaporator in the form of a fine spray. Thus, sufficient water surface is present to cause an almost instantaneous evaporation of a small quantity of water. This instantaneous evaporation is termed "flashing."

In this particular example (where 40° F. water is required) only about 1 per cent of the water is "flashed" into vapor, absorbing its heat of vaporization from the remaining 99 per cent, thereby chilling the main body of water to the required temperature.

The chilled water is pumped from the evaporator to the cooling apparatus. Steam introduced through the steam jet and traveling at high velocity through a Venturi tube produces the vacuum in the evaporator. Standard methods of steam condensation are employed to reconvert this steam and the "flashed" vapor into liquid.

In addition to air conditioning, the Decalorator will economically and efficiently serve many cooling purposes, it is said. It is claimed to be ideal for cooling drinking water and other liquids and process work.

The Dallas district sales office of the Republic Steel Corporation has been closed and removed to 2322 Gulf Building, Houston, Tex. R. E. Lanier, district sales manager, will be in charge of the new Houston office.

Index to Advertisers

Advertising Office: 330 West 42nd Street, New York, N. Y. Philip H. Hubbard, *Vice Pres. and Adv. Mgr.*
District Offices: 1050 Straus Building, Chicago; 703 Market St., San Francisco

American Institute of Architects, The 6
American Sheet & Tin Plate Company 8
American Telephone & Telegraph Company 23
American Window Glass Company 4
Angel, H. Reeve, & Company, Inc. 29
Atlantic Terra Cotta Company, The 1

Beaux-Arts Institute of Design 28
Bommer Spring Hinge Company 7

Cabot, Samuel, Inc. 6
Carnegie Institute of Technology 28
Chalfonte-Haddon Hall 30

Dixon, Joseph, Crucible Company 19
Duriron Company, Inc., The 31

Eagle-Picher Lead Company 3

Faber, Eberhard 10

General Electric Company, Air Conditioning Department 21
General Electric Company, Merchandise Department ..... 3rd Cover
Gillespie Brothers, Inc. 28
Gillott, Joseph, & Sons, Ltd. 25

Higgins & Sons, Chas. M. 25

International Nickel Company 27

Kiesling, John W., and Son, Inc. 25
Koh-I-Noor Pencil Company, Inc. 25
Kohler Company 30

Libbey-Owens-Ford Glass Company 12

Mueller Mosaic Company 7

Nelson, Herman, Corporation ..... Back Cover
Newport Rolling Mill Company 7

Pittsburgh Steel Company 4
Portland Cement Association 2

Reading Iron Company ..... 2nd Cover
Republic Steel Corporation 36
Ric-wiL Company, The 29
Ruberoid Company, The 35

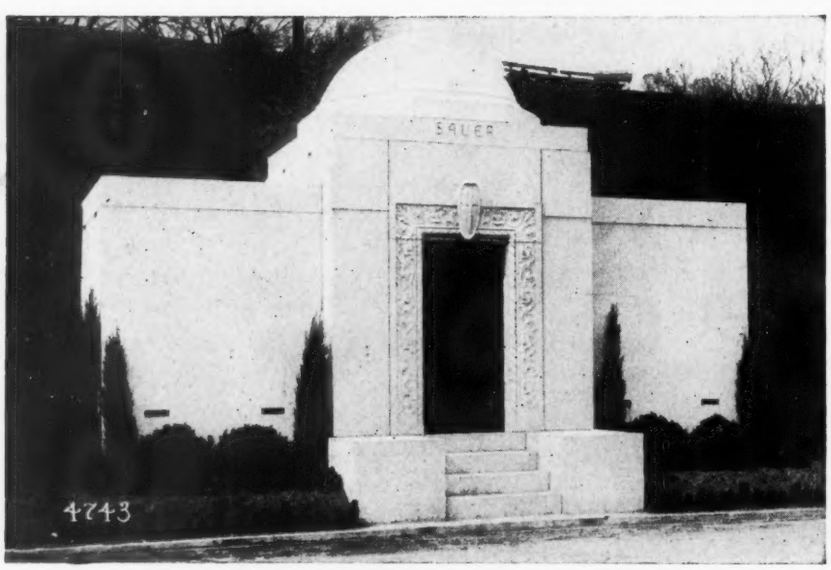
Sargent, J. D., Granite Company 34
Smyser-Royer Company 29
Superior Sheet Steel Company, The 31

Vonnegut Hardware Company 5

Wilson Engineering Corporation 28

WHITE MOUNT AIRY GRANITE

Specify Mount Airy With Confidence



Generations Will Admire Your Choice

The Sauer Mausoleum, Richmond, Virginia

J. D. SARGENT GRANITE COMPANY

MOUNT AIRY, N. C.

MANUFACTURERS OF GRANITE FOR EVERY PURPOSE